DOCUMENT RESUME

ED 059 163 24 SP 005 523

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|---|---|
| AUTHOR | Joyce, Bruce R.; And Others |
| TITLE | Implementing Systems Models for Teacher Education: Strategies for Increasing Feasibility. Final Report. |
| INSTITUTION | Columbia Univ., New York, N.Y. Teachers College. |
| SPONS AGENCY | Office of Education (DHEW), Washington, D.C. Bureau of Research. |
| BUREAU NO | BR-0-0774 |
| PUB DATE | May 71 |
| GRANT | OEG-070-4726 |
| NOTE | 168p. |
| EDRS PRICE | MF-$0.65 HC-$6.58 |
| DESCRIPTORS | *Elementary School Teachers; *Program Evaluation; *Teacher Education; *Teacher Education Curriculum; *Teaching Models |
| IDENTIFIERS | CETEM; *Comprehensive Elementary Teacher Education Models |

ABSTRACT

This investigation inquired into Phase I and, to some extent, Phase II of the USOE Comprehensive Elementary Teacher Education Models Project, in which ten sets of specifications (program models) for elementary teacher training were developed using systematic planning procedures. The inquiry was designed to identify procedures for increasing the feasibility of the program models and focused on the following aspects: 1) the conceptions of the teacher, 2) program content and curriculum strategies, 3) provisions for matching training procedures to student character, 4) provisions for relating to the field, 5) systems for managing the learning systems. Research and development tasks which would be likely to increase the feasibility of each model were identified. Analysis indicated that most of the program specifications are fairly conservative. Several models had incomplete or weak conceptions of the teacher with consequent lack of program focus and questionable program power. Some programs had exceptionally strong elements which could be used to improve others, for example simulation laboratories, systems for integrating program elements, and ways of ensuring program integrity. The most powerful common element is the management technology which permits individualization, integration of program support systems with instructional systems, and continuous program redevelopment and monitoring. (Author/MBM)

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BR 0-0774
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# IMPLEMENTING SYSTEMS MODELS FOR TEACHER EDUCATION:
## STRATEGIES FOR INCREASING FEASIBILITY

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U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

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# IMPLEMENTING SYSTEMS MODELS FOR TEACHER EDUCATION: STRATEGIES FOR INCREASING FEASIBILITY

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May 1971

The research reported herein was performed pursuant to a grant with the Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

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Office of Education
Bureau of Research

SP 005523

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# Abstract

The objective of this investigation was to inquire into Phase One and, to some extent, Phase Two of the Bureau of Research Teacher Education Project in which ten sets of specifications (program models) for elementary teacher training were developed using systematic planning procedures. The inquiry was designed to identify procedures for increasing the feasibility of the program models. The aspects of the models which were focused on included:

The conceptions of the teacher
The program content and curriculum strategies
Provisions for matching training procedures to student character
Provisions for relating to the field
Systems for managing the learning systems.

The written specifications of the models were read and analyzed with the above elements receiving the greatest attention in terms of criteria generated to test them hypothetically.

Research and development tasks which would be likely to increase the feasibility of each model were identified. These included procedures for increasing the workability of the conceptual models of the teacher, strategies for increasing the integration and power of program strategies, procedures for more effectively relating program elements to students, and a general strategy for linking the programs to schools.

The analysis indicated that most of the program specifications as presently constituted are fairly conservative, probably due to the type of behavioristic analysis which was employed and the short time available to the teams which developed them. Several models had incomplete or weak conceptions of the teacher with consequent lack of program focus and questionable program power. Program strategies, except for provision for individualization could be substantially strengthened.

Some programs had exceptionally strong elements which could be used in others to improve their power. For example, the use of simulation laboratories, systems for integrating program elements, and ways of ensuring program integrity are well developed in some models and could be adapted to strengthen others.

Probably the most powerful common element in the models is the management technology which permits individualization, integration of program support systems with instructional systems, and continuous program redevelopment and monitoring to capitalize fully on the management systems. The conceptions of the teacher and the program strategies themselves need considerable strengthening. Procedures are available for accomplishing this during the development phase.

# Chapter One

## The Problem: Increasing Feasibility in Systems Approaches to Teacher Education

During the last two years the United States Office of Education has sponsored a program to apply systems planning techniques to the reconstruction of teacher education curricula in the United States. On March 1, 1968, ten institutions in the United States, several as coordinators of consortia, commenced an attempt to build systematic models from which teacher education programs could be constructed. These are:

Florida State University
University of Georgia
University of Massachusetts
Michigan State University
Northwest Regional Educational Laboratory
University of Pittsburgh
Syracuse University
Teachers College, Columbia University
The University of Toledo
The University of Wisconsin

The institutions completed their final reports within eight months and a program of feasibility studies has been completed.

The product of this effort represents a first generation program to make an application of broad systems planning principles to a major area in education. Although the work was concluded within a very short period of time, and is flawed seriously as a result, we have not before in the history of education had an occasion in which ten strong teams have approached the same area simultaneously, employing similar and conscious program-planning principles but otherwise under no constraints to do similar work. A massive increase in the literature of teacher education has resulted and the substance of that literature is the plans for some very different programs of teacher education.

The products are a base on which some major attempts at comprehensive reform in teacher education will be based. In addition, the result of the effort is exceedingly instructive in terms of the technologies of curriculum development.

It is especially important to look at the resulting products in terms of the similarities and differences with which the teams of planners completed the tasks of systematic program construction and the tasks which now need to be engaged in in order to implement the program models which emerged from the early effort.

In the project of which this report is the result, a number of scholars from several institutions examined the reports from Phase One of the Bureau of Research Projects, reports of which contained the specifications from the program models and also of Phase Two, in which eight institutions conducted varying types of studies into the feasibility of revising and implementing the models into operating teacher education programs.

The purpose of the study was to analyze the feasibility of the program models in terms of six elements of the models. Each of these elements results from engagement of six tasks which are common to systematic program planning. Although "systems" procedures have by no means been standardized, the six tasks generally appear in any paradigm for systematic program construction, although they sometimes exist under different names than the ones which will be employed here, and the order in which they are accomplished varies quite widely. However, there is a certain logic in the following order:

1. The development of the performance model. A major task is the conceptualization of the goal of the training program, and this task must be accomplished in terms of a working model of the product of the program. Their performance model should be as complete as possible and describe aspects of performance, interrelationships among the aspects, and must work. In the case of a teacher education program, the fulfillment of this task requires the development of a working model of a functioning teacher. Furthermore, the teacher must be conceptualized in terms of the system within which he is operating. Classrooms and schools need to be described as well as teams of teachers if the teacher is to be a member of a team, and it would be desirable if the conceptualization were to include also the wider systems of the community within which the educational institution functions.

2. The analysis of the performance model into sets of behavioral objectives. The model has to be broken down into specific domains of functioning, if these are not already available within the model, and these in turn have to be broken down into sets of behaviors, sequentially organized wherever that is possible, so that programs can be built to achieve those objectives, and to provide the trainee with the devices for integrating them into the overall performance system. This task is exceedingly complicated when one is dealing with a complex functionary like a teacher, and cognitive behaviors, affective behaviors, and skills interrelate and overlap, and yet, must be perceived distinctly and in relationship to each other if program implementation is to proceed.

3. The specification of training systems. (The development of components and component strategies.) The next task consists of the development of program components to accomplish distinct sets of

behaviors. Within each component, distinct curricular or teaching strategies need to be constructed, and sometimes a good many of them need to be developed for a particular component. Components need not be homogeneous with respect to teaching strategies. For example, the same component may use sensitivity training techniques to achieve certain kinds of behavior, and behavior modification strategies within simulators may be employed to teach yet other sets of behaviors. However, all the training subsystems need to be clarified in a modular organization. One of the really interesting features of the developed ten models is the very wide range of curricular strategies which are recommended within and between components and the types of modular plans which were utilized.

The development of components needs to be accompanied by the development of specifications for needed support systems (as closed-circuit television laboratories, etc.). In some cases, support systems serve many components whereas in other cases special support elements have to be constructed for particular components.

4. The development of the overall training system. (The creation of interlocking relationships among components.) It is always tempting for a program planner to develop discrete components having their own distinctive strategies, their own instructional materials, and their own special procedures for staff training. However, both for the sake of the student, whose life should not be fragmented unnecessarily, and in order to achieve an integrated performance at the end of the program, components need to be related to one another systematically, then modules cast in reconcilable terms. In addition, support systems need to be developed and integrated into the training components and the performances required of training agents must be specified and training for _them_ has to be identified.

5. The development of management systems. To monitor a large program, to enable it to adjust to the individual differences among students, both in terms of goals, achievement, and learning style, to build in provisions for program revision, to insure continuous feedback and evaluation for managers, faculty and students, and to integrate components and support systems smoothly, comprehensive management systems need to be developed.

6. The reconciliation of the program and product with the client and the field. A young person entering the field of education has personal needs and conceptions of teaching which he needs to explore and to relate to the training opportunities which are presented to him. He has to explore himself as a person on his own terms as well as explore himself as a professional-in-training. Whether he is learning to be a teacher aide in a hierarchical team, or preparing to be a specialist in a subject discipline,

he needs to learn frames of reference which will enable him to apprehend alternative careers and ways of following them, ways of reconciling his personal needs for marriage and family with the demands of career, and he needs to learn how to make a training program work for him, so that he does not become simply an artifact of a machine. Hence, specific procedures for humanistic guidance have to be developed for the client of the program.

Similarly, the teacher education program cannot be unrelated to the field which it serves. Teacher education has to supply the institutions which serve children with competent and humanistic personnel. These institutions must share in the identification of competencies and the development of training procedures. A smooth transition needs to be provided between any training institution and the educational institution in which the teacher will work. The creation of the setting for teacher education in fact, is a problem for universities, training schools, and not for any of these working in isolation from each other. The problems of reconciliation with the field become particularly acute when the training program is designed to produce a teacher who is in any way different from the typical functionary in the existing schools, and whoever designs the training program, it is almost always a major hope that they will be different.

The completion of these six tasks or their equivalent results in a program model which is ready for field trials to test model elements and for the development of implementation stages, that is, the creation of instructional materials, program and management systems, support systems, staff training procedures, and the like. The program models become the guidelines of these activities. Poised as we are at the present moment of time (December, 1970) the major task is to maximize the feasibility of the models--to rectify their defects and capitalize on their strengths while developing and implementing them.

The major procedure of the present project was to analyze the written products of Phase One and Phase Two in terms of the above six elements with the object of identifying ways by which the feasibility of the models might be increased. Three separate types of analysis were engaged in by the research team. First, all the Phase One reports* were read and compared and contrasted in terms of each of the six elements or tasks. For each element criteria were developed for analyzing the products to point out ways in which they could be improved in order to increase feasibility--the likelihood of a successful implementation. These criteria are somewhat loose and in many cases were intuitively derived, but we believe that the analyses are generally revealing. For example, the relationships of the programs to the students (part of element six) were analyzed in terms of four available models for matching students to program elements. The type of use made of each model was discussed and recommendations were generated for increasing program implementability through choosing systems for relating students and educational elements and developing those systems to optimize student-program relationships.

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*Teachers College and Wisconsin are not included in the analysis because members of the team were intimately connected with the products of those institutions.

Second, each program model was analyzed on its own terms in an effort to determine compatibility among program elements and ways of increasing program integrity. This procedure involved the development of a picture of the "model of the model" and an attempt to see how the elements of the models are integrated. In many cases it appeared that devices generated within one model could improve the feasibility of another model by making it more compatible.

Third, the feasibility studies (products of Phase Two) were analyzed in terms of their contribution to the six major model elements. Since much of the feasibility effort was devoted to cost and analyses and procedures for program development, only a small portion of the actual feasibility studies proved to be relevant to the present analysis, which is directed not at cost analysis or the logistics of developing and implementing the program models, but at the characteristics of the projected programs and the problems of making them workable in terms of clarity of goals, probable effectiveness of procedures, and acceptability to teacher candidates and public schools.

The report is structured to be used by potential consumers of the developed products of Phases One and Two of the Bureau of Research Teacher Education Project. It is designed to help these consumers analyze the products so that they can select among them the various program elements which they may want to develop and implement and to identify ways of increasing the workability of the programs by modifying them during the development and implementation phases. A team consisting of Bruce Joyce, Marsha Weil, and Jonas Soltis of Teachers College, Columbia University, Elizabeth Wilson of Montgomery County, Maryland Public Schools, David Hunt of the Ontario Institute for Studies in Education, and Michael Apple of the University of Wisconsin at Madison read the products of Phases One and Two and wrote the report. Authors of specific chapters are identified except for Bruce Joyce, who was responsible for the project and the development of the report.

The report is organized in terms of topics which permit both a comparison of the programs and the identification of strategies for improving them during development and implementation.

## Assumption of Systems Planners

Chapter Two deals with the general assumptive world of the program developers and identifies the most obvious common elements in the models. It is the substantive introduction to the report.

## The Performance Models

Chapter Three compares and contrasts the conceptions of the teacher which were developed to serve as program goals and analyzes them for unity and model-like character and ways of increasing their power.

## Program Strategies: Improving Programs on Their Own Terms

Chapter Four, from an analysis by Jonas Soltis and Bruce Joyce, takes each model on its own terms, analyzes the program strategies, and presents strategies for improving each program by increasing its unity and unique power. It also discusses the management systems and speculates about the possibility of a national bank of modular elements to serve many programs.

## The Programs and the Field

Chapter Five was prepared by Elizabeth Wilson and analyzes ways of increasing implementability by relating the programs to the school systems which must cooperate in training and employ the new graduates.

## The Program and the Student

Chapter Six, largely by David Hunt, deals with the student and the program environments and presents a series of models which can be employed to increase the adaptability of the programs to the characteristics of the students.

## Behaviorism and Conservatism

In Chapter Seven Michael Apple analyzes several problems in behavioristic methodology, especially the possibility that behaviorism is inherently conservative and concerns himself with how to avoid that likelihood.

## Needed Research

Chapter Eight recommends research into issues raised by the program models, especially areas where it will be difficult to improve teacher education without an increase in knowledge.

# Chapter Two

## The Assumptive World of Systems Planning in Teacher Education

The set of common aspects of the program models reflect an assumptive world which is made up of three parts: (1) a commitment to the application of systematic, future-related planning procedures to education, (2) a commitment to bring educational training to bear directly on the revision of public education, and (3),(even more) of an awareness of the possibilities of contemporary management technology. An individualized, let alone a personalized program can not really be conceived of for a large student body without the capacity to obtain and store vast amounts of information about students and to maintain and deliver a wide variety of alternative instructional experiences as appropriate.

Thus, although educators have talked about individualized curricula for decades they have not lived in a technological world which would enable a really thorough form of it. Nearly all successful forms of individualized instruction have depended on a very favorable instructor-student ratio and even then the instructors have to be highly competent and committed to individualization and personalization.

Quality control has been similarly limited. Although curriculum theory has postulated for many years that there should be direct linkages between behaviorally-stated objectives, instructional alternatives, and evaluation processes, the actualization of this paradigm has not really been possible. For example, even a committed instructor teaching a course to twenty students simply cannot manufacture enough tests by himself to track progress adequately and adjust instruction to the varying rates of progress of his students.

With the advent of technologies for developing large and complex information-storage-and-retrieval systems there arrived also the capacity to develop management systems which could coordinate student characteristics and achievement with instructional alternatives and maintain reasonable levels of quality control. Very few educators have as yet become familiar with these technologies, partly because they are new and not yet disseminated throughout the education community and partly because many educators equate "management systems" with "dehumanization," and have reacted adversely.

It is safe to say that all the program model teams are comfortable with the idea of management systems and believe that when we learn how to use them we can make education much more flexible and human.

Thus, they live in an assumptive world in which one looks for ways of developing "support systems," "choice points," and "feedback systems," and they develop training in "simulators" with "recycling to a more appropriate alternative" and "increasing complexity of instructional tasks." In other words, they attempt a massive task analysis of the problem of preparing a teacher, confident that a task analysis can be made and that management systems can be created to implement the results. They recognize that enormous quantities of jargon will be needed to symbolize the concepts of objectives, modular curricular alternatives, evaluation and support systems necessary to such an effort. They believe that such a technology will eventually not only permit instruction to be tailored to individuals but also will enable the student himself to shape many instructional goals and means.

Hence, the "model developers" live in an assumptive world comprised of management systems theory, a concern with efficiency and systematic training (the world of cybernetic psychology, actually), and the belief that the results of applying these to teacher education will be a more personal environment for the student, a more effective teacher-product, and a university in which desirable innovation can be made (cycled into the system) much more easily than is true of the present organization.

## Common Working Hypotheses

The teams worked independently and completed their reports within a very short span of time. However, in addition to their use of systematic planning procedures, the ten teams operated on certain implicit but common working hypotheses about teachers and training programs, although they differed considerably in the ways they applied these assumptions to teacher-education program development. These common hypotheses are manifested through the program reports and represent basic but tentative assumptions which implicitly formed either a common frame of reference about teaching and training or the basis on which decisions could be made concurrently with the testing of the assumptions themselves.

1. All of the teams viewed the teacher as a clinician in much the sense that physicians are clinicians. The teacher was seen as the possessor of strategies for making instructional decisions, and as the possessor of the needed repertoire of knowledge and clinical skills for carrying out his decision. It was assumed that decision-making competence and interactive teaching competence could be defined with precision and both played prominent roles in the performance models. (See: Michigan State, ComField, Florida State for examples.)

2. Teachers were generally though of as members of clinical teams, and frequently as specialists on those teams. Several of the models provided "career ladders" with places for many kinds of specialists in a career hierarchy. This should not be interpreted to mean that "team teaching," as presently practiced, was seen as a panacea for the ills of education. Rather, it reflects

the belief that colleagual relationships are necessary so that teachers check one another's opinions, examine one another's teaching, coach one another, and specialize in order to increase competence.[1] (See: Georgia, Toledo, Wisconsin, Massachusetts for descriptions of teams of specialists.)

3. All of them assumed that it is possible to define the needed competencies of the teacher in terms of specific behaviors and to match those behaviors with specific learning experiences, especially short instructional modules calculated to achieve those objectives. Furthermore, it was assumed that large sets of instructional modules could be combined into curricular systems which could be entered at many points in the teacher-training process and could be prescribed to match the personal characteristics of the students who were preparing to be teachers. It was assumed that objectives and the specifications of modules could be stored in automated data banks so that they could be retrieved on the basis of diagnoses shared in or even made by the teacher trainee himself.[2]

4. It was assumed that management and control systems could be developed to monitor such teacher-training programs and to provide them with flexibility, especially adaptability to the student. In several cases, the models included the specifications for computerized systems for managing programs including several thousand behavioral objectives matched with an equally large number of instructional modules. (See: Florida, Syracuse, ComField for succinct descriptions.)

5. All of the models assume that any teacher who could take major responsibility in a classroom would need a long period of training and that a consortium of colleges and school districts was necessary to provide the conditions for academic training, pre-service training, internship or practice teaching, and continuing in-service education. They also assume that an educational team will contain personnel of more limited functions whose training could be relatively brief.

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[1] The conception of the teacher articulated by Robert Schaefer in The School as a Center of Inquiry (New York: Harper, 1967).

[2] The Michigan State Model, for example, contained more than 2700 behavioral objectives matched with instructional modules, all organized within an automated retrieval system. Toledo selected over 1400 objectives from a list of over 2100.

6. All of the teams made a heavy use of simulation laboratories--situations which are somewhat less complex than the "real world of the teacher" in order to teach clinical skills. The "real world of the classroom" is considered entirely too chaotic to function as a setting for learning complex teaching skills. The simulation laboratory, by simplifying the training situation, permits teaching skills to be acquired sequentially until the teacher has a range and depth of competency to cope with and learn in the complexity of the school situation. The models tend to prescribe a sequence of activities which proceed from an identification of a clinical skill, its practice under simulated conditions or with small groups of students, and then its practice in a field situation. This kind of pattern, replete with systematic feedback and assessment, occurred again and again in all ten of the models. (See: ComField, whose plan centers about the use of teaching laboratories.)

7. All of the teams hoped to make available to the teacher knowledge from the behavioral sciences which he could use to make and carry out educational decisions. They saw the teacher as an applied scientist in a basic sense of the word, using behavioristic techniques to plan for students and to select appropriate experiences for them. At the same time they were acutely conscious of the limits of our knowledge both about teaching and about preparation of teachers. Hence most of the models included a large variety of strategies for preparing the teacher and all of them were designed to equip him with a large repertoire of teaching strategies from which he could select for use with his students, as well as with techniques he could use to study the effects of his teaching. (See: Teachers College for explicit positions in this area.)

8. Last, it was assumed that a model should contain provisions for revision and redevelopment as a fundamental feature--not as a subsidiary element or aftergrowth. Replanning and reimplementation are assumed to be basic, as basic as training components themselves. Also, all of these models were created within a very short period of time, and each of the teams was acutely conscious of the need to build a structure that could be revised and further developed. Consequently, various aspects of each model are better developed than other aspects. In some cases, the behavioral objectives are elaborately specified, but much work remains to be done in the development of instruction systems to achieve those objectives, although the basic strategies are laid out. In other cases, a great deal of attention was paid to the development of management systems although much remains to be done to build satisfactory behavioral objectives and instructional modules to complement the well-developed management systems. A fortunate result of this is that there

## Chapter Three

# Conceptions of the Teacher: The Goals of the Programs

by

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This paper is devoted to a survey of the program goals-the performance conception of the teacher who is to be the product of the program. The range and type of performance models reveal the complexity of systematic program procedures and of the extraordinary variety which emerges when different frames of reference are permitted wide latitude as they employ systematic planning procedures to a major training area. This variety is particularly striking because of the common belief that systematic program planning necessarily results in homogeneity among programs. This has distinctly not been the case in this effort.

At the same time, nearly all the conceptions of the teacher can be made more functional as development and implementation are accomplished. Because the performance models of the teacher differ considerably from one another, the types of modifications needed to increase their feasibility vary considerably. In this chapter the performance models are analyzed and suggestions made for modifying them.

## The Nature of the Performance Models

A performance model is an integrated set of behaviors which are coherently related to each other. This system of behaviors constitutes the product which the educational program is designed to achieve. When the desired end-product of a program has been described as a functioning system of performance-in this case, a working model of a teacher-then it is possible to begin the substantive development of the means of the program.

There are great difficulties to the development of a "system" description of a complex functionary like a teacher. We can underline these difficulties by identifying the conventional ways of developing conceptions of complex jobs and the obstacles to applying these to the description of the teacher. There are four general ways of developing performance or working models of complex functionaries. One of these is by the empirical study of a functionary. To develop a model of a salesman (for example), we might study the most successful salesman (salesmen) of a given product (the one whose dollar sales were the highest) and determine his (their) behaviors. A second method is to obtain a consensus by members of a field about the characteristic or optimal behavior of functionaries within the field. Again, using the case of a salesman, one might ask outstanding salesmen what behaviors were responsible for their success, or ask regional sales supervisors what makes the best salesmen so effective. A third is to derive the model from the application of a theory, either an empirically-verified theory, or a deductive construction. Again, with respect to salesmanship, one might study social psychological theories about the kinds of factors which bring about sales with the object of training salesmen to bring about those conditions. Selecting a theory, one would deduce the properties of the salesman from it. Hence we would have (do have) theories of salesmanship based on rapport-building activity (make friends with the client), on behavior-modification (shape the client!), on status-linked behavior (make the client feel he will lose face if he doesn't buy) and so on. The fourth method is to make a comprehensive analysis of all the processes engaged in by the functionary. Such an analysis draws on theories, consensus, and the application of empirical studies where appropriate. To develop a model of an airline stewardess, for example, we might analyze the aircraft and the equipment, work out a description of services which might be offered during flight, check customer and supervisor opinion, and build, from those data, a simulator in which we could try alternative patterns of behavior until a satisfactory combination emerged.

Ultimately, the application of systems procedures to the development of a training program requires the fourth course of action. We are not ready for this course as yet. There are relatively few comprehensive empirical studies as yet of what teachers do and there is still little knowledge about the kinds of procedures which are followed by the most able teachers. (In fact, how to identify effective teachers is a question which has by no means been resolved!) There is, in fact, considerable controversy about what criteria of performance to use. Complicating the situation is the position taken by many educational leaders, such as Arthur Combs[1], that the most effective teachers are those who are most fully themselves, and have developed a style which actualizes their personality. This position almost denies that there could be agreement on the performance of a capable teacher, for they would be unique artists, actualizing themselves and facilitating the actualization of their students through unique interaction. Also, there is not yet a sufficient theoretical base, particularly one grounded in empiricism, to permit a full description of the efficacious teacher in terms of a theoretical model about the conditions which produce learning. Yet, there are sound theoretical positions about learning and training, and many of them are empirically grounded. The work in this area simply is not complete, but there is much to build on.

Each of the teams of model-builders had to reconcile themselves to our present state of knowledge and the lack of agreement on conceptions of the effective teacher. All worked under the serious limitations of time, or they probably would have engaged in major studies to create more comprehensive analyses of the teacher function. Yet, considering the time limitation, the analyses actually engaged in are remarkably complete and strikingly similar, although the range is instructive. In their work, we can see variations on each of the four common ways of developing performance models.

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[1] Combs, Arthur, The Professional Education of Teachers: A Perceptual View of Teacher Preparation, Boston: Allyn and Bacon, 1965.

Each team of model-builders made a set of choices which narrowed the ground he had to search as he tried to develop a performance model. The approaches which resulted are interesting in their diversity, but also in their common belief that it would be possible to develop behavioristic performance models of teaching. As indicated in Chapter Two, they all shared the belief that a complex professional functionary would have to be a decision-maker and a clinician, in the same sense that a physician is both of these things. (He decides and he executes.) They all envisioned a person of far greater responsibility and capacity than is ordinarily the case in the teachers of today's schools. They consequently envisioned not only a teacher who is different from today's average classroom teacher, but a school organization which is considerably different. This projected change requires that school districts make operational changes in order to make a setting for implementing the programs and making effective use of their graduates. The models tended to assume career hierarchies, ranging from the more simple to the more complex functions within team structures, which also assume changes in the school.

## Criteria for Effective Performance Conceptions of the Teacher

To function effectively as the goal of a program, the performance conceptions need to be behavioral and unified, and to represent a working model of the teacher. Behaviorality is essential in the construction of a systematic program. A general behavioral specification provides program direction and permits a task analysis into behavioral elements (specific behavioral objectives). This enables training procedures to be matched to behavioral elements in a modular, managed plan.

Unity refers to the internal consistency of the performance conception and the "fit" of its major components to one another. Unity provides distinctive direction to a program and consistency among its parts--thus it increases the power of a program by providing for cumulative impact of program components and clarity of direction to faculty and students.

The "modelness" of the performance conception--the adequacy of its representation of a functioning teacher provides for the integration of specific competencies as they are developed in the program so that they work together. When one considers the complexity of the programs to prepare teachers which result from systematic planning--almost 3,000 modules in some cases--it is no mean feat to ensure that such a myriad of behaviors become related, in the trainee, so that he can operate effectively. One of the considerable potentials of systematic behaviorism in program planning is in this area--the creation of a program whose training products (achieved behavioral objectives) become related into a real-life teacher who replicates the idealized conception of the teacher. One of the great difficulties of the traditional training program has been the lack of such a performance model and the unrelatedness of program elements or their lack of coordination (learning psychology at a time far removed from its application, for example). Unless the systems planner develops a clear, comprehensive conception of the performing teacher, the advantages of systematic planning will not be realized.

This conception has philosophical as well as practical implications, for the kind of teacher who results should reflect a philosophically acceptable view of education. A teacher is a creator of environments for children--he creates a large part of the world of childhood. This is of such importance that we must be able to accept the philosophical underpinnings of the model of the teacher as well as the practicality or workability of the model.

These three criteria: behaviorality, unity, and "modelness" will be applied as we discuss the conceptions of the teacher that were developed.

## The Pittsburgh Approach
## An Individualizer of Instruction

The Pittsburgh team selected the individualization of instruction as the focus of teacher training. They decided to build their performance model around a conceptualization of a teacher who could individualize instruction and who would work in schools organized to tailor instruction to individual students. They describe individualized instruction as follows:

> Individualized Instruction. The central theme in the elementary instructional programs for which the new model will train teachers in individualization. This term covers any arrangements and procedures that are employed to ensure that each pupil achieves the learning goals designated for him. The definition of individualization used in this model is as follows: Individualized instruction consists of planning and conducting, with each pupil, programs of study and day-to-day lessons that are tailor-made to suit his learning requirements and his characteristics as a learner. This definition focuses on instructional planning with and for each individual student

> before teaching him, then teaching him according to the plan.[1]

Six features of individualized instruction programs were identified and the Pittsburgh program is designed to teach the future teacher how to bring about instruction that has those characteristics.

> 1. Instruction is organized in terms of programmed curricular units rather than courses, with the units in each curricular area arranged in a specified sequence.
>
> 2. On the basis of achievement pretests and the diagnosis of learner characteristics, lessons are tailor-made with each pupil rather than being planned for a group.
>
> 3. Several modes of individualization are employed, singly or in combination, in suiting instruction to the individual pupil: varying learning goals from pupil to pupil, varying learning materials and equipment, varying the learning setting (independent study, pupil team, tutoring by the teacher, small group working without the teacher, small group with the teacher, large group), varying instructional techniques, assigning different students to different teachers, and varying the rate of advancement through the curriculum.
>
> 4. Each pupil is expected to master a learning task before proceeding to the next task; mastery is determined with use of a unit post-test. The criterion score for mastery is empirically determined in relation to performance on subsequent tasks.
>
> 5. Teachers offer pupils help chiefly on an individual basis, and are always available for consultation.
>
> 6. The pupil conducts most of his learning independently of the teacher, employing self-direction.[2]

Whether the Pittsburgh team considered conceptions of the teacher other than an individualizer of instruction is not clear from their documents nor do they explain alternative conceptions of individualized instruction or criteria for selecting the one they did.

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[1] University of Pittsburgh, A Model of Teacher Training for the Individualization of Instruction (OE-58017) Washington, D.C.: U.S. Office of Education, 1968. p. 3.

[2] University of Pittsburgh, Ibid., pp. 4-5.

However, having chosen, they proceeded to make a task analysis of the process of individualizing. The task elements that result fit together logically and are almost certainly workable, given certain working conditions.

(It is worth noting that the Pittsburgh design for teacher training utilized the same features that they wish the teacher to employ in individualizing instruction. In other words, the same specifications are used for the teacher performance model as for the teacher education system model, except for the obvious adjustments for client differences.)

To make an operational description, in terms of the specific behavioral objectives for the program, the description of individualized instruction was expanded and made more specific, although the Pittsburgh Model is in general not nearly complete and much work will be done before we can assess it.

The Pittsburgh conception of the teacher assumes a particular type of school with special support systems; it makes no attempt to train a teacher of classes--the Pittsburgh teacher is a teacher of individuals. The teacher is thus seen as a system within a system, which increases the likelihood that their working model will turn out to be feasible.

At the same time, the Pittsburgh conception would not fit any school situation. To take maximum advantage of the competency of their teacher, one has to create a school in which teachers are deployed in an organization which facilitates individualized work and are backed up by support systems which include banks of individualized, self-instructional materials (such as IPI).

The specifications of the Pittsburgh teacher and program are sufficiently incomplete that it is difficult to evaluate the model completely. However, the competencies appear to be behaviorally stated consistently and clearly. The fairly narrow and distinctive description of the teacher as an individualizer lends itself to a relatively unified conception. There may be a message in this, for the Pittsburgh performance model has a unity not achieved by any of the more eclectic approaches (and perhaps not achievable by any broader approach).

As to the extent to which the conception appears to be a working model of the teacher, the Pittsburgh task analysis (which is made clear in several illustrations (pp. 105-107) is straightforward and very tight--with the relatively narrow and distinctive conception of the teacher, this can be organized very clearly.

However, what will happen as the conception is expanded to make a full program is not clear. Is the teacher to be prepared to define and facilitate objectives in all areas for all learners? Unless some clear limitations are made the specifications even for an individualizer can approach those for a Renaissance Man. If a teacher is a definer and facilitator of any learning goal, then he is probably being defined as a system analyst backed up by a fully-developed system. Pittsburgh seems, as do many of the models, to shade in the direction of a model which may be beyond the capabilities of the human, requiring information-processing and response capability more appropriate to a large organization. As we shall see, several of the other programs also shade in this direction.

## The ComField Approach: A Teacher Who Can Produce Learning

The performance model developed by the team representing the consortium gathered together by the Northwest Regional Education Laboratory describes the teacher in terms of instructional and non-instructional competencies. We shall give attention only to the instructional aspect. The description of instructional competency begins with a description of the teacher as a "person who can bring about learning in children." Or stated differently, "who can bring about appropriate changes in pupil behavior."[1]

In order to make this specific, the ComField team committed themselves to develop a descriptive taxonomy of the kinds of learning that are desirable for elementary school children and determine the kinds of teaching which would be likely to achieve those objectives.

> Having established the prime objective of a teacher education program, the next step is to determine how this objective is to be brought about. In terms of a systematic analysis, this requires four interrelated steps:
>
> 1. specification of the pupil outcomes desired:
> 2. specification of the conditions by which each outcome can be realized:
> 3. specification of the competencies needed by teachers to provide the conditions that are needed for the realization of each outcome: and
> 4. specification of the conditions by which the needed teacher competencies can be realized.[2]

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[1] Northwest Regional Educational Laboratory, A Competency Based, Field Centered, Systems Approach to Elementary Education, (OE 58020) Washington, D.C.: U.S. Office of Education, 1968.

[2] Northwest Regional Educational Laboratory, Ibid., p. 7.

In order to make a full development of such a statement of performance, the ComField team needed to go through four steps. The first three defined the performance model, or the goals of teacher education, and the fourth developed the teacher education program itself.

Figure 3.1. Steps in Developing a Program: ComField[1]

| STEP 1 | STEP 2 | STEP 3 | STEP 4 |
|---|---|---|---|
| Pupil outcomes that are desired. | Conditions that bring about the pupil outcomes that are desired. | Competencies needed by teachers to provide the conditions that bring about the pupil outcomes that are desired. | Conditions that bring about the competencies teachers need to provide the conditions that bring about the pupil outcomes that are desired. |
| The goals of education. | The instructional program within the schools. | The goals of teacher education. | The teacher education program. |

Put another way, it was necessary for the ComField team to develop a taxonomy of pupil outcomes, to make postulates about the kinds of environmental conditions that would be likely to bring about those outcomes, to make a further specification of the behavior of the teacher that would produce those environmental conditions.

This approach involves the specification of theoretical or empirically-derived positions about learning. It thus can take advantage of the behavioral sciences, but must also operate under the limitations that exist in our present knowledge about how to bring about various kinds of learning outcomes.

It is worth noting that both the Pittsburgh and the ComField approaches conceptualize the teacher as a behaviorist (all the models do, in fact). The behaviorist conception requires the teacher to specify learning outcome in terms of pupil behaviors, and each requires that the teacher attempt to tailor the environment to the characteristics of the student, and to the particular kinds of outcomes desired. Whereas, the Pittsburgh model emphasized the specification of means for producing outcomes for individual learners, the ComField model includes individualization as a general aspect of educational method, but conceives the teacher in more kinds of roles than Pittsburgh did.

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[1] Northwest Regional Educational Laboratory, Ibid., p. 6.

The ComField conception raises a number of complex questions which have to be resolved before their performance model can be fully comprehended. Two of these stand out. First of all, it is not clear whether every teacher is to be responsible for bringing about any learning outcome with an appropriate strategy for every learner. This is a really crucial question, for there are myriad types of learning and a vast number of potential strategies for bringing these about. The model seems to lead to an unmanageably complex functionary.

The partial answer to this is found in ComField's expectations of the future.

> In order to plan an instructional program meaningfully, some prediction as to the nature and purpose of education in the 1970's and beyond has to be made. Two predictions have been agreed to by the planners of ComField.
>
> 1. A functional science and technology of education will evolve, and it will bring with it an educational program that is markedly different from that which is now found in most schools. Two differences are anticipated: 1) the widespread use of pupil-materials instruction, and 2) the application of systems technology in the design of instructional experiences. Out of both will grow the application of "instructional systems" to the education of children.
>
> 2. Three major classes of educational specialists are anticipated: 1) instructional analysts, 2) instructional designers or engineers, and 3) instructional managers. As presently conceived the instructional analyst will be the member of the instructional team primarily responsible for identifying the classes of pupil outcomes for which the school should be responsible, and the instructional conditions that bring them about; the instructional designer-engineer will have the task of developing instructional systems to bring these outcomes about; and the instructional manager (IM), will bring the effort of the first two members to bear upon the educative process. The task of the IM is viewed as one of creating and/or maintaining an instructional environment that brings about learning in children. The IM's specific function within the school is likely to be primarily a supervisor of the instructional process rather than the prime manipulator of it. Operationally this means that while the IM

> of the future must be able to diagnose learner readiness, prescribe appropriate learning experiences, evaluate their effectiveness and prescribe next learning steps, he must also be able to apply the instructional systems developed by the other members of the educational team, supervise instructional assistants, use electronic and computer media, etc.[1]

Thus, ComField's teacher is an instructional manager who works in an environment which increasingly consists of student-material relationships with a presumed vast storehouse of instructional possibilities which are mediated through instructional systems. This greatly changes our view of him. Thus, the second question which has to be resolved involves determining the nature of responsibility when a teacher supervises rather than manipulates instruction. Is not the system the primary agent? At times ComField speaks as if the teacher were the kind of broadly-responsible agent we are familiar with in the traditional literature of teacher education but at other times he appears to be one of a large group of supervisory technicians in a kind of large warehouse of self-instructional materials.

Thus, while the model is quite behavioral and unified, there appears to be an ambiguity which could, if cleared up, improve the functional quality of the conception. It appears to us that if the teacher is to work in the kind of environment ComField specifies, then his role can be defined much more narrowly and thus a more feasible goal will result.

As these questions are resolved, the model of the teacher will be in sharper focus and programs to achieve the model will be more clearly feasible.

## The Georgia Approach:
## Working from the Objectives of Elementary Education

The Georgia model was developed by conceptualizing a desirable kind of elementary education and identifying the teacher performance which would be necessary to bring that kind of elementary education into existence.

To do this, the Georgia team began with the identification of seven broad objectives of elementary schools. These in turn were used to determine the kinds of conditions that would be likely to lead students toward those objectives. From those conditions the teacher job analysis was made. ("What should the teacher do to produce those conditions?" was the question asked.) Then the job analysis was broken down into specific teaching behaviors. The six goals of elementary education are:

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[1] Northwest Regional Educational Laboratory, Ibid., p. 18.

1. Providing the student with the tools of learning necessary to meet his current obligations and for his continued development towards becoming a lifelong learner. Tools include skill in reading, writing, listening, speaking, computation, observation, and the more advanced processes of comprehension, discrimination, application, analysis, synthesis, and evaluation. Tools, also, include the understanding and appreciation of the arts, and the skills necessary to maintain adequate physical and mental health.

2. Assisting the student to understand his social and physical world. A basic knowledge of the social world includes an understanding of the institutions of society, their interrelationships, and their relationship to the individual. It also includes an understanding of the make-up of society, its religions, ethnic and racial groups, and the influence culture has on the development of the individual. Basic knowledge of the physical world involves knowing how natural laws and one's environment affect the society and the individual, and how one adapts to his habitat.

3. Developing the foundation for good citizenship. Good citizenship consists of an understanding of the democratic process, respect for each person as an individual, and a respect for the rights of others. Knowledge and understanding of the foundations upon which the society has been built and insights into the evolutionary nature of society provide the student with a grasp of his own role in the society. Good citizenship further implies that the individual will become a contributing member of the society capable of rational thought and action.

4. Developing the basis for effective human relations. An essential function of human relations in the elementary school is to help the growing child to know and to understand himself and to grow in healthy attitudes of self-acceptance. While learning to accept himself, it is equally important that he learn to understand and accept others and to be concerned for their welfare. He must realize that all society is based on interaction with others, and consequently, that society is healthy and productive insofar as the interaction is healthy and productive.

5. Introducing the process of change and its relationship to the individual and the society. Effective change is impossible without both the ability to think and to communicate with others in group situations. In an era of rapid societal change such as we are now experiencing, these skills become particularly crucial. Consequently, the elementary school must help children to study events, to place a value on them, and then to make wise decisions as to their own action in relation to them. They must be able to glean from the past that which is realistic for progress in the future. Thus, they must be equipped with the processes necessary for problem solving, and they must be skilled in the processes of communication and group interaction.

6. Assisting the student in developing a personal value system that will enable him to make rational choices. Man's relationship to other men and to society as a whole is largely determined by the attitudes and values that he holds and the worth he places on them. In this area, the elementary school has the responsibility of helping the child to analyze his environment and from this, to discern those attitudes and values that he can accept to be true because they are conducive to the common good. Essential here are the notions of the worth of man, the value of property, social justice, etc. However, in an era of rapid change, it is particularly important that the child be helped to rationally distinguish what is right, rather than what is said to be right. Thus, it is essential that the child have the skills necessary to be aware of the disparities of human circumstance and the skills necessary to identify and to correct unsatisfactory notions. Only in this way can he develop those attitudes and values that will promote effective citizenship and progress toward the common good.[1]

The products of neither Phase One nor Two provide us with information about how these goals were identified, but it is stated that they are generally agreed on by educators.

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[1] University of Georgia, Georgia Educational Model Specifications for the Preparation of Elementary Teachers, (OE-58019) Washington, D.C.: U.S. Office of Education, 1968. p. B-4, 5.

The six goals provided the framework from which elementary school objectives and pupil learning behaviors were identified. Both of these tasks (identifying objectives and pupil behaviors) were accomplished by specialists within the College of Education at the University of Georgia. These specialists worked in content area teams (reading, arithmetic, etc.) which resulted in objectives and pupil behaviors within the framework of the curriculum areas which characterize the present elementary school. For example, Figure 3.2 (see page 3.14) gives an example of the working procedures used to develop this performance analysis.

### Objective

To learn to solve problems.

### Pupil Learning Behaviors

1. The child identifies problems.
2. The child formulates hypotheses.
3. The child gathers information.
4. The child analyzes data.
5. The child evaluates alternative solutions.
6. The child generalizes solutions.

### Teaching Behaviors

1. The teacher organizes problem situations.
2. The teacher interests pupils in problem and observes its formulation.
3. The teacher observes information gathering and processing.
4. The teacher assists, as required, in developing a solution to the problem.

### Suggested Specifications for a Teacher Education Program

A teacher education program will provide the student with:

1. Knowledge of and skill in developing problem situations.
2. Knowledge of and skill in techniques of presenting problem solutions methods.
3. Knowledge of and skill in critiquing problem solutions.

Figure 3.2. Cognitive Processes--Specifications Work Sheet

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University of Georgia, *Ibid.*, p. III-3.

Consensus of experts was used by the Georgia team to identify the elementary school objectives and the pupil learning behaviors from which the job analysis was derived.

The overall method for developing the specifications is clear enough--teams of specialists identify school objectives, from those desirable pupil behaviors are generated and then, in turn, teacher behaviors and competencies are developed. The result is that the substantive conception of the teacher grows in small pieces. This has advantages and disadvantages. An advantage is that the job can go on in manageable pieces. A team can identify one goal and go straight through until the competencies related to it are identified and matched with performance modules to constitute the substance of the program. This produces a "vertical" consistency of all modules and the overall goals.

There are several problems with this method which can, however, be overcome.

First, the selection of the content areas greatly affects the nature of the competencies which result. What should be the areas? If one weighs philosophy and the arts heavily, the competencies will be weighted on that side. The possible content areas are very large. The process of selection of the content teams should be fully rationalized and made transparent. In addition, potential relationships among the areas should be made clear. Further, a system for relating the work of the teams to each other needs to be employed so that needless dublication is avoided and the languages of the teams can be related to each other. The Georgia program as it stands doesn't provide a rationalization for the selection of the content areas nor a system for relating the work of the teams (except for a system to make relatively uniform the concepts used to describe specifications.)

As a consequence, the Georgia conception of the teacher is constructed of sequences of small units within separate content areas. Moreover, there is no clear plan for sequencing, so that the relationship among the units must be inferred from examining them.

In the course of implementation these problems should be faced directly and solved. Before performance modules are developed an integrated conception of the teacher should be developed (quite possibly by developing an integrated conception of the goals of the elementary school). The content areas should be rationalized in terms of this unified conception and a system developed for relating the specifications in the several content areas to each other. In addition, systematic plans for sequencing within the content areas would ensure that the units of behavior add up to a solid performance in each area.

In the course of making their analysis, the Georgia team decided that no one kind of personnel could engage in all the behaviors that were being identified, and they were developed into four major categories for elementary school personnel: aide, teaching assistant, certified elementary teacher, and specialist. Each of the levels implied competency at the previous levels, and the four categories provided a career hierarchy for instructional personnel within the elementary school. The education-career combination can be seen in Figure 3.3 (see p. 3.17).

The Georgia team attempted to achieve behaviorality and standardization of form in stating objectives for the program by specifying for the cognitive, affective and psychomotor domain hierarchical behavioral levels (taken in the first two cases from the Taxonomies of Educational Objectives) and using them to state objectives for the types of teachers (aide, teacher, specialists) identified for the program. For example:

| Characteristic | Level of Development | | | | | |
|---|---|---|---|---|---|---|
| | Cognitive | | | Affective | | |
| | T.A. | Tch. | Spec. | T.A. | Tch. | Spec. |
| 3.15.16 Curricular Programs for elementary school science | | 3 | 6 | | 3 | 5 |

Figure 3.4. Performance Specifications--Science[1]

This means that the teaching assistant requires no development in this area, that teachers do at cognitive level 3 and affective level 3 and specialists at cognitive level 6 and affective level 5. In one sense this device does assure behaviorality and uniformity in the statement of specifications. However, it remains to be seen how general behavioral descriptors (cognitive level 3, for example) can function over a variety of types of characteristics or content. This will have to be worked out in development.

Unity of conception is enhanced by the clarity of the steps which Georgia used to develop its specifications--proceeding from the goals of elementary education straight through to the objectives of the school, behaviors of children, and hence to the behaviors of the teacher. However, by developing the actual specifications through content or curriculum-area teams working separately in their areas, what resulted is undoubtedly a clear job specification of the teacher, which is what Georgia was after, but not necessarily a working model of the teacher. The mass of specifications which resulted--over 2500 in number--need to fit together organically and

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[1] University of Georgia, Ibid., p. III-81

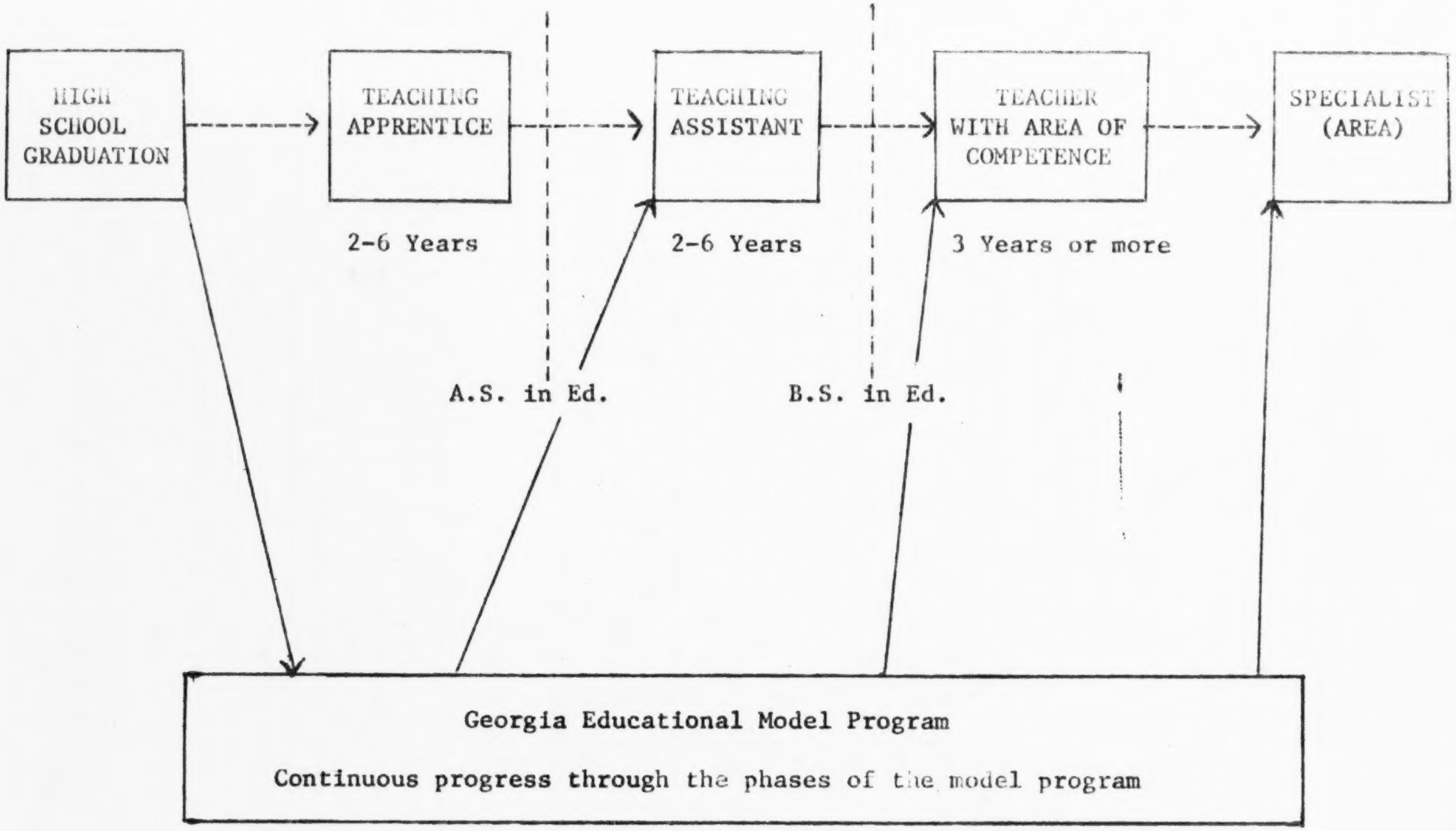
HIGH SCHOOL GRADUATION
TEACHING APPRENTICE
TEACHING ASSISTANT
TEACHER WITH AREA OF COMPETENCE
SPECIALIST (AREA)
2-6 Years
2-6 Years
3 Years or more
A.S. in Ed.
B.S. in Ed.
Georgia Educational Model Program
Continuous progress through the phases of the model program

Figure 3.3. Paths in the Teacher Career Field

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University of Georgia, Ibid., p. II-5.

it is difficult to tell at this stage of development whether that will be the case. During fuller development and implementation it is essential that this be accomplished.

## The University of Toledo Model: The Teacher As a Team Member

The Toledo group developed their performance model by describing a clinical team of teachers in action and by analyzing the functions of a team member:[1]

> A New Role for the Elementary Teacher
>
> Simply stated, the prime functions of the teacher are the transmission of knowledge and the transmission of values. As previously mentioned, both cognitive knowledge and societal values and norms are becoming increasingly complex. When attempting to fulfill his task as a transmitter of values and norms, the teacher must not only mediate between the child's world and the adult in an effort to close the ever widening generation gap, but he must also deal with a serious cultural gap. The cultural gap is especially important when the student's cultural background is markedly different from the teacher's. When norms are in a state of flux, as in our attitudes toward sex and drugs, the teacher may not feel competent to force his values upon the pupils. When the teacher attempts to fulfill his function as a transmitter of knowledge, he is again caught in the web of rapid change. It seems clear that if the teacher is to fulfill these two functions successfully, he will need help.
>
> The Teacher As a Team Member
>
> If the elementary teacher is to maximize his effectiveness in the transmission of cognitive knowlege, he will need to be a member of a team - a team made up of specialists. The purpose of the team would be to design instructional systems. An instructional system is a strategic complex of human and nonhuman components which are dynamically interdependent and interrelated and work together to attain a particular instructional goal or set of goals. The instructional system receives

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[1] University of Toledo, Educational Specifications for a Comprehensive Elementary Teacher Education Program (OE) Washington D.C.: USOE, 1968, Vol. I, pp. 61-62.

inputs from the external environment, processes these inputs in a prescribed instructional environment according to strategies derived from research and expert opinion, so that the output generated will have a high probability of achieving the prescribed goal or goals. The instructional system components may include some or all of the following: learner(s), teacher(s), mediated instructional materials, assessment and feedback instruments, information processing and displaying machines, support technician(s).

The key to this arrangement is the team. Instructional decisions are made cooperatively by a team of specialists with a master teacher serving in the role of instructional specialist throughout the entire instructional system design process. Each team could serve a number of master teachers. For example, in a building of thirty teachers and nine hundred pupils there could be six master teachers all of whom were served by the same Instructional System Design team.

The membership of the ISD team would vary depending upon the needs and background of the pupils, e.g., a slum school would probably need the services of at least one sociologist or an elementary school near Cape Kennedy might require a specialist in space technology in order to take advantage of the children's knowledge of space science which they learned at home. Some of the specialists that would very likely serve at all instructional systems design would be:

| | |
|---|---|
| 1. Subject matter specialist | To update the subject matter. |
| 2. Curriculum specialist | To determine the mix of what to teach to whom. |
| 3. Research specialist | To evaluate the instructional system's efficiency in terms of the output produced and to collect and feed back data needed to redesign the system; to calculate cost/effectiveness estimates of alternative instructional strategies and systems. |

| | |
|---|---|
| 4. Educational sociologist | To interpret the social and cultural milieu of the child. |
| 5. Educational psychologist | To study the child's growth and development and his individual learning patterns. |
| 6. Instructional technologist | To design, develop and test modules of mediated instruction. |
| 7. Administrative specialist | To meet the administrative and managerial needs of the team. |
| 8. Information Management Specialist | To develop information storage and retrieval systems, computer based information management system, and computer simulation techniques. |
| 9. Counseling and Guidance Specialist | To fill the guidance and counseling needs of the students through and with the help of the teachers. |
| 10. Pupil Evaluation Specialist | To specify in behavioral terms the goals for each pupil, to assess the progress of each individual pupil and to make recommendations to the ISD team for modifications of the pupil's program. |

The next step was to develop complete models of each of these roles and to fit them together again in a model of a smoothly functioning team.

Toledo thus imagined, as did ComField and Pittsburgh, a school which is organized in sets of instructional systems and staffed by teams of developers who constantly evaluate and improve the system and work with teachers to tailor learning environments to children.

As in the case also of ComField and Georgia, a massive list of behavioral objectives were developed. The result is a massive list of "working parts" of the teacher but there is no general, overall description of the functioning teacher which can provide a model-like, unifying structure which can serve to integrate the elements of the program.

Thus, the feasibility of the program would be increased enormously if general models of the team members were built--models that could integrate the enormous variety of job specifications that resulted from the project. The description of the team itself, which provides a good point of departure, is not enough in itself--models of its functioning parts need to be developed.

## The Michigan State Model: The Application of the Behavioral Sciences to Teaching

The Michigan State model gave the greatest emphasis to the teacher as an applied behavioral scientist. The teacher was seen as a scientist in the classroom, creating and testing hypotheses. The Michigan State team's description is directly to the point:[1]

> A key concept of the BSTEP model is clinical behavior style. The major function of this concept is to regularize the behavior of teachers. Clinical behavior style denotes those particular and stylized sets of activities and mental processes which a practitioner possesses. Such a practitioner of education will be specifically trained to utilize his client-related experience as the basis for continuous learning and improvement of his skills as a teacher. The clinical behavior style which is appropriate for a professional teacher consists of six phases: describing, analyzing, hypothesizing, prescribing, testing, and observing consequences. The last phase, observing consequences of the treatment administered, leads in turn to the first by a process of recycling in order to describe the changed situation.
>
> The progressional foundations of the program are centered on the behavioral sciences for two reasons: (a) The dominant task of all educational activity is to develop pupil behavior within various settings. The behavioral sciences provide the systems of knowledge and inquiry most relatable to this task. (b) A distinctive feature of empirical science as a way of acquiring

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[1] Michigan State University, Behavioral Science Elementary Teacher Education Program (OE 58024, three volumes) Washington D.C.: 1968.

knowledge is that it is self-corrective.

The teacher was seen within this concept in terms of three processes: proposing, doing, and reflecting. He would identify problems, propose solutions to them and reflect on the situation. Starting from this view of performance, the Michigan State team proceeded to identify the competencies needed to apply the behavioral sciences to the solution of educational problems. The total number of competencies reached more than 2700 by the time the team had completed the work. The procedures followed ensured a high degree in behaviorality, especially considering the fact that teams worked in the humanities, where a behavioral tradition is not only rare, but often scorned.

The "clinical style" and "applied behavioral scientist" served to unify the program's specifications and provide a kind of working model of the teacher, although the large number of teams which developed the specifications of necessity had to do much of their work separately.

In the feasibility study a management system is proposed which will include clear and rigorous testing of each module to ensure effectiveness and redevelopment. It should be possible to augment this to include a study of the interrelationships of the behavioral elements and their integration into the clinical behavior of the teacher. This would provide for the empirical augmentation of the clinical model and lead to its testing and the subsequent development of procedures to increase the integration of streams of development. We will deal with this question more extensively in the next chapter as we explore ways of increasing the feasibility of program strategies.

The behaviorism and a clinical view of teaching found in the Michigan State model was common to various models as was the range of concepts used. The other model builders, Syracuse, Massachusetts, Florida State, and Wisconsin, shared many elements with this conception.

## Massachusetts

The Massachusetts conception of the teacher describes teaching in terms of three components: Human Relations, Behavioral (Teaching Skills), and Content. In itself, this tripartite conception is imaginative, and all three aspects can be defended as important to teaching. Giving such prominence to human relations represents an important contribution to conceptions of the teacher. However, the selection of the three components is not explained, nor are they related to each other. Some philosophical and psychological underpinnings are provided in the human relations area, but not in the others. Thus, a promising idea does not result in a real working model of the teacher, although we believe this problem could be remedied.

Within each of the three areas behavioral elements of teaching are specified as objectives of the teacher education program. No provision is made for relating growth in one area to either of the others. Nor are the skills, knowledges, and values eithin any of the areas related according to any general scheme. The eighteen teaching skills, for example, are not described in any particular relation to each other nor is it clear how they were selected from the myriad of possible skills.

The Massachusetts program offers the promise of a model of the teacher but there is curiously little attempt to capitalize on this beginning, and the unrelatedness of the behavioral elements is almost vexing. It should be possible during subsequent stages of development to increase the power of the program by developing a more powerful view of the teacher.

The Massachusetts conception makes a strong contribution in another direction. It is structured so that the program can be adjusted to persons seeking a wide variety of specialties in differentiated teaching staffs. Several types of competency are identified for each specialist and a profile of performance within each specialty. Each type of competency is organized in terms of a sequence of competencies so that students can enter each type at their level of achievement.

There follows a figure from the Massachusetts report which is used for a profile analysis.[1] (See Figure 3.5, page 3.24.)

In the Massachusetts profile analysis, profiles are constructed in several areas for each of several positions within differentiated teaching staffs. The entering student is matched with the desired profile for the particular specialty for which he is aiming, and the diagnosis that results can be used in planning his curriculum. As in the case of the other modular curricular designs, the Massachusetts model links specific learning objectives with instructional alternatives, and the selection of these can be made in relation to the specialties for which the candidate is preparing.

## Syracuse

The Syracuse program is structured around a conception of teaching which is to characterize both the teacher who emerges and the program to prepare him. This conception is an "intent-action-feedback-process" model.

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[1] University of Massachusetts, Model Elementary Teacher Education Program (OE 58024, two volumes) Washington D.C.: USOE, 1968, p. 84.

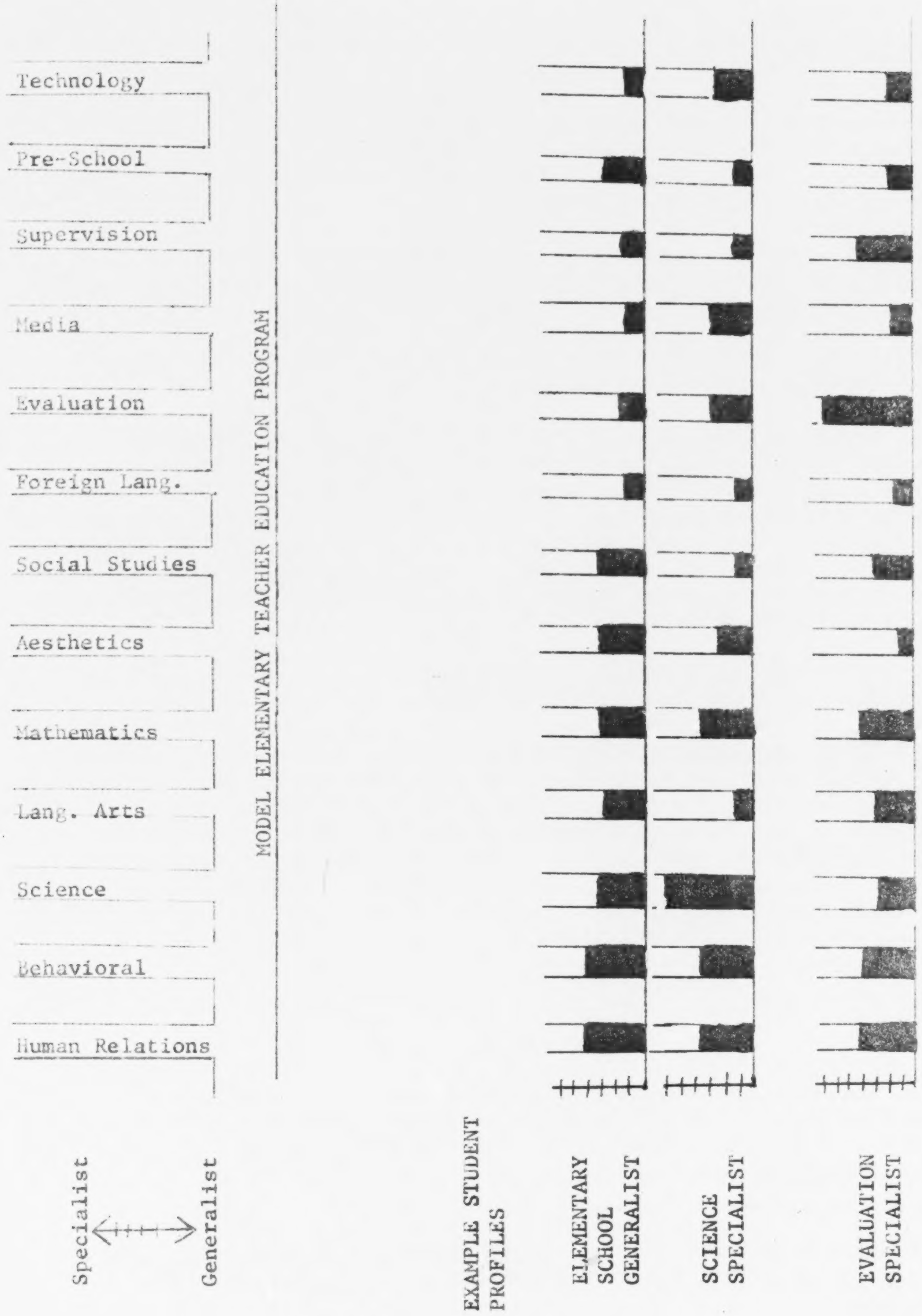

Figure 3.5. Massachusetts Profile-Analysis Chart.

The model program is seen as functioning according to the following patterns. The demands of a changing world will make demands on the program for some kind of relevant response. In the pluralistic situation, we believe there will be a diversity of proposed responses relevant to the situation. This diversity of possible responses will lead to confrontations in an open, inquiring climate. The better alternatives should ultimately prevail. These alternatives will be translated into what have been defined as responsible behaviors, and are characterized as:

| | | |
|---|---|---|
| A. | Intending | Intent |
| B. | Acting on the basis of the intention | Action |
| C. | Accounting for the consequences of the action | Feedback |
| D. | Using the results of the accounting to modify future intents and actions | Process |

The substantive conception of the teacher within the framework of this model is described in terms of seven components, one "liberal" and six "professional."

### The Components of the Model Program

The model program is designed as a five-year program. The first two years are devoted to liberal studies. The junior year begins exploratory professional study and continues liberal studies. The senior year is devoted to full-time professional study. The final year, including the summers preceding and following, is seen as a resident year and a period for developing and refining: (a) skills and knowledge learned in previous years, and (b) a specialization that is unique for each student.

The seven components of the program are integrated into the basic design of the total program. These components are: (a) Liberal Education, (b) Methods and Curriculum, (c) Child Development, (d) Teaching Theory and Practice, (e) Professional Sensitivity Training, (f) Social-Cultural Foundations, and (g) a Self-Directed Component. The staff developing the model composed of these components provided an excellent test for the workability of the pluralistic assumption about the nature of reality in teacher education. The components are diverse in nature and character. The full range of their diversity will be more apparent in subsequent chapters of this report which spell out each component more fully.

The specification of the behavioral elements which make up the teacher is carried on in the development of the seven components. Thus, the behavioral description of the teacher emerges as the components are developed. The intent-action-feedback paradigm serves to unify the work and to provide some model-like quality to the overall product. Nonetheless, the process results in a mass of behavioral elements which then have to be integrated rather than being elements which result by breaking down or task-analyzing an overall model.

As in the case of Michigan State, the Syracuse Model can provide, during development, for the creation of a more complete working conception of the teacher and this will greatly enhance the feasibility of the program.

Nearly all the models, as mentioned previously, employed behavioral performance analysis to affective as well as cognitive and skill domains and Syracuse included a large number of examples. The following is a statement of educational objectives for a module relating to affective behavior.

## TTP-7: Educational Objectives for Affective Behavior

I. Prerequisites: Completion of TTP-5. Concurrent with tutorial experience in the public schools.

II. Placement of Module: Junior, pre-professional year.

III. Estimated Time: Student time - 4 hours. University faculty time - 0 hours. Clinical Professor and Clinical Teacher time - 0 hours.

IV. Operational Objectives: The purpose of this module is to develop the ability to discriminate between statements of educational objectives describing different levels of personal involvement, attitudes, motivations, values, etc., and to write objectives for lessons and curricula which include these types of outcomes. The general objectives of this module should prepare the student to do the following:

A. Recognize and discriminate between statements of educational goals describing the affective characteristics of children (as distinct from the other objectives already studied) as inferred from watching specific types of behaviors.

B. Write and justify the appropriateness of statements concerning the affective outcomes of lessons and curricula.

If these broad objectives are achieved, the student should, for example, be able to do the following:

A. When given a list of educational objectives, including the types of objectives studied in preceding modules and the different types and levels of affective behavior, be able to identify each and state the criteria for discriminating between them.

B. Given a case study description of an elementary classroom, including the characteristics of the pupils, be able to prepare a set of educational objectives for the class and individual pupils for at least three levels of affective involvement, such as:

   1. Being willing to attend to the stimuli of the situation.
   2. Responding when directed.
   3. Consistency of self-initiated responses, at least within the limited regions of activity, etc.

C. Be able to relate a taxonomy of affective behavior to the various types and levels of attitudes, (towards self, others, objects, and activities), motivations (affiliation, achievement, power, avoidance of failure) interests, and values.

D. When asked to prepare a set of affective objectives for the child with whom he is working in a tutorial relationship, prepare objectives for at least one area of the child's activities, including at least three levels of pupil involvement. Justify the importance of these objectives for the child, school, and society.[1]

---

[1] Syracuse University, Specifications for a Comprehensive Undergraduate and Inservice Teacher Education Program for Elementary Teachers (OE 58016) Washington D.C.: USOE, 1968. pp. 245-246.

This example shows not only a type of behavioral analyses in the affective domain, but the emphasis on reflective thinking by the teacher that characterized the intent-action-feedback paradigm. The behavioristic description of the teacher did not ordinarily imply a mechanistic-behaving teacher, but one with fluid, adaptable capability.

Syracuse also described the teacher as a member of a team, working with support teams and with a great variety of instructional systems and specialists available to him. This matrix is not fully described, but again we find the teacher in a very different role than in the average present-day elementary school.

## Florida

The Florida State University conception of the teacher was arrived at in an attempt to break down the tasks of teaching into identifiable parts which could serve as the unifying goal of the program. (See Figure 3.6 on page 3.29).

The extent of rationalization of the Florida conception of the teacher was unusual--the development team clearly was making a serious effort to develop a model of a functioning teacher and relate the parts of that model to one another.

The long quote that follows describes their conception of the teacher and its justification:

> Five categories of teacher behaviors were identified as basic to all elementary teaching. They are stated here in their most abstract form. The first four are:
>
> 1. The teacher will plan for instruction by formulating objectives in terms of behavior which is observable and measurable.
>
> 2. The teacher will select and organize content appropriate to specified objectives in a manner consistent with both the logic of the content itself and the psychological demands of the learner.
>
> 3. The teacher will employ appropriate strategies for the attainment of desired behavioral objectives.
>
> 4. The teacher will evaluate learning outcomes on the basis of changes in behavior.
>
> These four behavior categories are integral parts of a regenerative or cybernetic conception of teaching in which both long range and immediate knowledge of results serves constantly to modify the direction and shape of the teaching act.

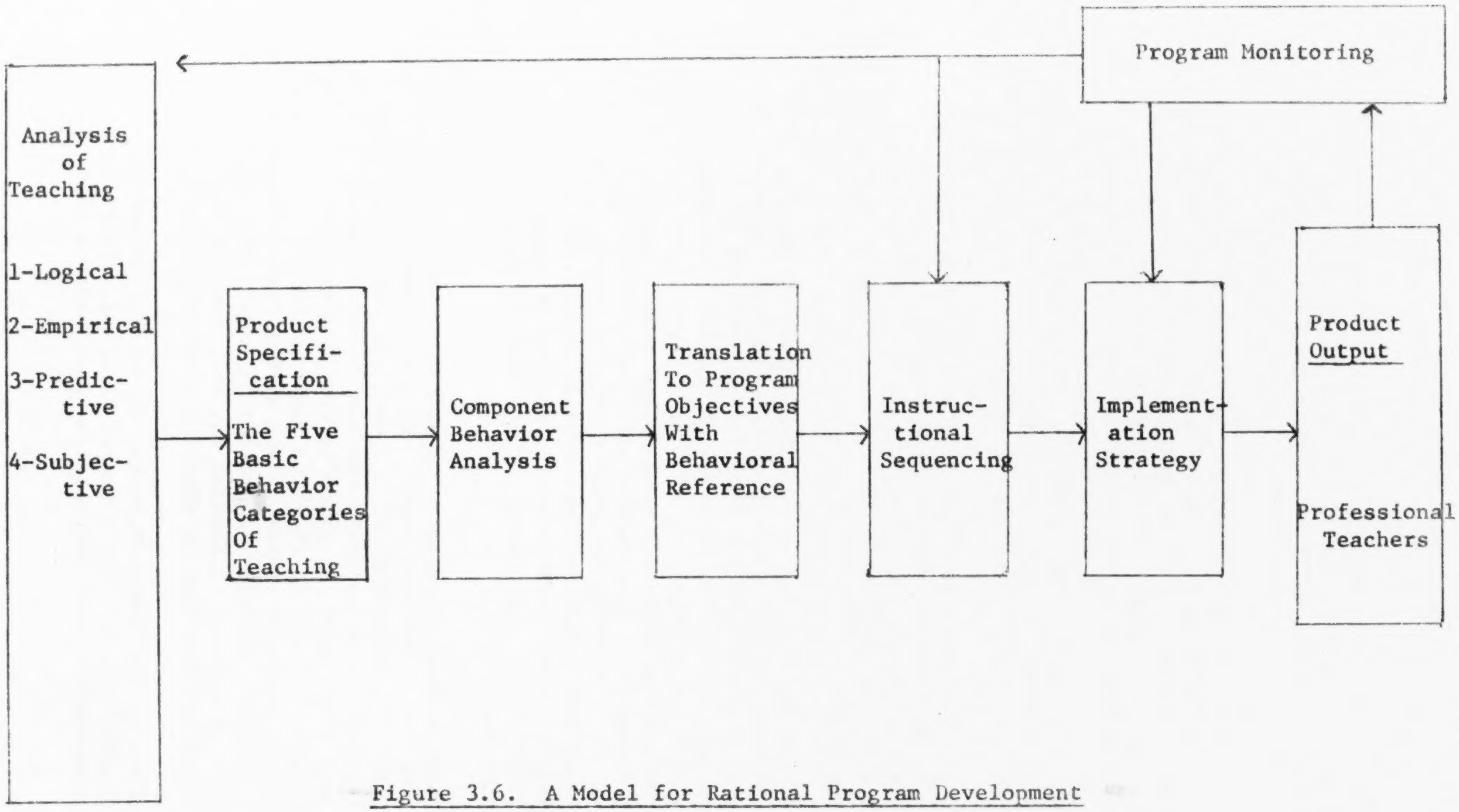
Program Monitoring
Analysis of Teaching
1-Logical
2-Empirical
3-Predictive
4-Subjective
Product Specification
The Five Basic Behavior Categories Of Teaching
Component Behavior Analysis
Translation To Program Objectives With Behavioral Reference
Instructional Sequencing
Implementation Strategy
Product Output
Professional Teachers

Figure 3.6. A Model for Rational Program Development

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Florida State University, A Model for the Preparation of Elementary School Teachers (OE-58018) Washington D.C.: USOE, 1968, p. 36.

The fifth category of behaviors was of a somewhat different order:

5. The teacher will demonstrate an acceptance of leadership and professional responsibilities and demonstrate the ability to serve as a professional leader.

It takes little imagination to visualize all of these steps being followed by persons carrying out the teaching function, whether it is seen as that of an indirect facilitator of pupil learning activities, as the diagnoser of pupil needs and prescriber of pupil learning experiences, or as a direct transmitter of information to pupils via lecture. It seems likely that any approach to influencing the learning of others will demand competent performance in all five behavior categories.

While the chapters which follow contain detailed descriptions of the component breakdown of each of the five basic behavior categories, it is necessary at this point to explain the rationale for describing teaching in these terms.

It was decided that a regenerative model was the only realistic conceptualization which adequately provided for dealing with the infinite variability of learner responses. There is always the distinct possibility that the performance of highly precise and repetitive teacher behaviors will become a more important consideration than coping with learner response variability. In order to avoid this, all instances of verbal and non-verbal feedback must be recognized and interpreted by the teacher who is skilled at constantly modifying his own performance of teaching to maximally influence the learner.

Four behavior categories constitute broadly-conceived basic teaching tasks. In a very real sense, the formulating of objectives, the selection and organization of content, and the choice of appropriate strategies can be conceptualized as preactive tasks. That is, they are tasks which must normally be performed prior to any actual interaction with a learner, although under some circumstances, the execution of certain strategies may call for the involvement of learners in planning activity.

Planning for instruction is, of course, an essential prerequisite for all types of teaching. Although it is conceivable that instruction could proceed with objectives unstated, it is inconceivable that meaningful instruction could long proceed without a purpose. Following systems approach requirements demand that purposes (in the case of teaching, instructional objectives) be explicit and specific, with the assumption that only in this way can decision, execution, monitoring, and regeneration be accomplished with procision. For this reason, the statement of instructional objectives in terms as precise and behavioral as possible was a process utilized both in model program development, and in describing the basic tasks of teaching.

It must be acknowledged that a strong case can be made for the inclusion of other types of objectives, such as those which call for no more than exposure of a learner to natural elements within the environment, without specification of explicit expected outcome. Such ideas will ultimately receive attention in training, particularly during in-service years. However, for pre-service training, the use of a behavioral model holds the strongest promise as an organizing concept since it expedites acquisition of the knowledge and skill needed for initial entry into teaching.

The statement of objectives in behavioral terms facilitates elements of other basic tasks, such as the systematic selection of content for learning. A teacher who has learned to apply principles of selection will carefully diagnose learner characteristics and will consider the logic of specific content. He can apply these principles in such a way that learner interaction with that content will be enhanced. Teachers have traditionally played a significant role in structuring content for particular learners. The teacher of the future is likely to play a somewhat different role with respect to the selection and organization of content. A trend toward use of multi-media, including pre-packaged programs for individual learners, suggests a teacher role which is less that of a developer of instructional programs, and more that of an assessor and adaptor of pre-packaged programs. Either role demands that selection and organization skills be highly developed, and that considerable practice in examining, selecting, and utilizing a wide range of available content material be provided.

At some point, the teacher must decide on a strategy for arranging and controlling the conditions of the contact of learner with content, and then implement whatever strategic interaction he has selected. The model program treats factors underlying both the pre-active behaviors needed for strategy selection and the interactive behaviors involved in strategy implementation under the single behavior category of "strategy."

Strategy selection requires the teacher to make decisions about what kind of learning is involved, what environmental arrangements are most likely to promote the most productive involvement of a given learner with selected content. These pre-active decisions must be made if teaching is to be performed scientifically rather than haphazardly. Thus, the model program provides specifications for a sound theoretical decision base and for practice at reaching such decisions.

The ability to execute strategies, once selected, is a major goal of the model program and is considered a key to the successful performance of all types of teaching. Teachers must be able to arrange two basic kinds of strategic interactions: (1) non-personal interactions, and (2) interpersonal interactions, including both content-oriented and functional interactions.

Non-personal interactions require the teacher to arrange the physical environment so that the content is mediated through some non-personal means, such as the surroundings (as in a field trip), or some item on the media list, such as books, still and moving pictures, charts, audio equipment, laboratory models, and materials. Recent research activities give promise of providing useful guidelines which will assist the teacher in selecting and structuring student involvement with the non-personal medium most appropriate for a given learning situation (Briggs, 1967).

Interpersonal interactions of the content-oriented type refer to those in which the learner interacts with another person (usually the teacher) in a situation where the focus of the interaction is the content selected to further some instructional objective. Under this heading go behaviors often classified as instructional techniques or the "technical skills of teaching" (Stanford Center, 1967). These behaviors involve the execution of particular verbal and nonverbal tactics designed to evoke particular responses from students, to provide or secure feedback which can be immediately processed by teacher or students, or some similar purpose.

A second type of interpersonal interaction, which for these purposes is termed "functional interaction," refers to those interactions which are not primarily tied to the content selected for some instructional objective. Under this heading are found techniques for assessing and improving the physical conditions of the learning environment and for setting a psychological climate conducive to learning. Because reinforcement techniques have been proven crucial to the modification of behavior (Spaulding, 1964; Becker, 1967), and because the reinforcement concept is generally unrelated to the specific content of instruction, reinforcement skills are treated independently from other strategies and included under the functional interaction category.

To the same extent that a teacher performs certain tasks pre-actively and interactively as he seeks to influence learning systematically, he must also consider post-actively the results of his efforts. A conceptualization of evaluation which includes a formative (regenerative) function is fully compatible with the classic summative function which furnishes information in the form of grades and ranking. Teachers must evaluate the outcomes of instruction for the purpose of modifying the course of instruction, as well as to provide information relative to learner status and progress (Wilhelm, 1967). The instructional objective, considered first as the _sine qua non_ of planning, serves also as the basis for evaluation since it has been precisely stated in terms which facilitate observation and measurement. A wide range of skills must be acquired in order to evaluate the outcomes of instruction for the full range of purposes.

The fifth major dimension of teacher behavior, involving professional responsibilities and leadership, cuts across all other tasks and adds to the performance of teaching that quality which sets it apart from more inert activities. The component behaviors of this fifth behavior dimension receive somewhat less emphasis during the pre-service phase than in the in-service phase of training because of the more urgent priority of instructional and management skills and because of a readiness factor which cannot be assumed until there is input from experiences gained while carrying out full teaching responsibility.

In this category are skills related to handling of one's emotional behavior and development of a personal

> teaching style; skills in handling inter-personal relationships with colleagues within the profession and with persons and agencies outside of the profession; and with skill in interpreting, assessing, and applying results of educational research. All three of these areas are intimately interrelated and are necessary for a teacher who is to be an agent of change, and who will be able to adapt to changing conditions.[1]

Working from this unifying conception of the teacher the Florida team was in a position to make a task analysis of each of its component elements and maintain program unity and be sure that developed elements would fit closely into their model of the teacher.

This feature of the Florida program should be maintained and extended during development. Also, the conception of the teacher is flexible and provides for the incorporation of contemporary educational knowledge and skills - which is important for the actual elements which were developed by the Florida team were far less innovative than their conception of how to build a future-related program.

## Summary

Figure 3.7 (see page 3.35) provides a rough comparison of the prominent features of each conception of the teacher. All conceptions shared the following features:

1. The teacher was not only described in behavioral terms, but was seen as a behaviorist; a setter of behavioral objectives, user of behaviorally-oriented teaching strategies, and user of behavioral measurement techniques. There were no exceptions to this.

2. The teacher was seen as a member of a clinical team, rather than as a lone operator in a self-contained classroom. Specialists were envisioned in most cases.

3. The teacher was seen in most cases as working in an environment rich in support systems, especially self-instructional materials. Thus, he functions as a diagnoser and orchestrator rather than as the typical teacher of today.

### Shared Conceptions of the Teacher

1. Behaviorist
2. Team Member
3. Diagnoser and Orchestrator

---

[1] Florida State University, Ibid., pp. 35-41.

Figure 3.7. Essential Features of Conceptions of the Teacher

| Pittsburgh | ComField | Georgia | Toledo |
|---|---|---|---|
| Individualizer. Orchestrator of self-instructional | Teacher who can produce learning. | Teacher who facilitates ideal pupil behaviors. | Team member (a corporate conception). |
|  | Orchestrator and facilitator of wide range of materials and strategies. | Team member (hierarchical teams). | Uses behavioral techniques to function within support systems and work with large range of goals. |

| Michigan State | Massachusetts | Syracuse | Florida |
|---|---|---|---|
| Clinical Style--Applied Behavioral Scientist | Human Relations--Content-Behavioral Skills Conception | Intent-Action-Feedback Paradigm | Behaviorist--Hypothesis-tester |
| Hypothesis-tester using behavioral techniques | Behaviorist.<br>Team member and specialist | Behaviorist and Team member | Team member and orchestrator of materials |

Both the activities and the performance criteria of all the models manifest a concern with an emerging future. The documents so frequently refer to the inadequacy of our present knowledge about how to educate children that you might suppose that the teams were obsessed with feelings of ignorance as they prepared the models. There was a determination to develop a teacher who would join in the battle against ignorance. He would act as a hypothesis-tester, as one who would propose objectives for students, who would define the conditions likely to achieve those objectives, who would bring about those conditions and evaluate the outcome, and then would set to work again on the basis of what he observed. Although the styles of specification varied greatly, the teacher was seen in all cases as a member of a clinical team which would use the tools of the behavioral sciences to clarify objectives and to generate theses about the kinds of conditions that would achieve them. As an evaluator, also, he was seen as a behaviorist, using the techniques of social science to attempt to determine the results of his efforts.

In the affective and human relations domains also the behavioral sciences were very prominent. The teacher was seen as relating to other professionals, and it was assumed that it would be possible for him to receive the clinical training that would help him relate to others productively and that he would use knowledge from the behavioral sciences to guide his work with peers and community members as well as his students.

The teacher, then, was conceived as an applied scientist who would help create his field as well as practice on the basis of its present knowledge.

## Implications for Teacher Education: Commonality and Variability in Models of Teachers

The developed performance models reflect an implicit consensus about the most productive roles for the teacher today:

a. As an applied scientist (one who helps find the answers) and a behaviorist.

b. As a team member (a colleague and a specialist).

c. As a decision-maker and clinician (a strategist with a range of competencies).

d. As a change agent (and one whose personality can cope with change).

e. As a manager of instruction, orchestrating vast amounts of instructional material and support systems.

f. As a behaviorist--a "systems" man in his own right, setting behavioral objectives, breaking down learning tasks into their elements, and selecting learning activities and evaluation devices tailored to a range of students and differing kinds of learning.

In other words, no one developed a fixed performance model of the teacher - he was seen as one emerging and growing with the times and his own development. All saw behavioristic modes of planning and training as compatible with humanistic, affective goals, and with training to function in the humane domains. In fact, all saw behaviorism as the best avenue to a more humanistic as well as a more efficient education for children and teachers alike.

Hence, all of these systems planning teams denied the familiar assertion that systems planning techniques and humanistic education are incompatible.

The wide range of approaches to the development of the performance models included:

a. conceptions of individualized and personalized education (several models, with Pittsburgh giving this conception a major focus).

b. conceptions of teachers as people who make educational decisions, implement them, and get results. (ComField is most direct with this conception, but it is shared by all models to some extent, and the "clinical style" from the Michigan State Model focuses an enormous array of modules.)

c. conceptions of teachers as changers of educational institutions. (Especially heavy emphasis by Syracuse and Massachusetts, with Teachers College giving its entire conception to an innovator, and Florida and ComField providing linkages to schools through schools especially committed to innovation.

d. conceptions of interpersonal and affective behavior (Syracuse and Massachusetts were most explicit here).

This wide range (which appears wider the closer the examination) belies the notion that systems planners tend to produce homogeneous conceptions of goals and means. The products represent an especially wide range of alternative goals that can be used by second-generation planners to make available, within training programs, different conceptions of education and teacher education. A second-generation effort in this field can capitalize on the diversity represented here and a map of alternative performance models should gradually emerge.

On the other hand, the conceptions were greatly lacking as working models of the teacher. Rather than developing an overarching conception which was then broken down into behavioral elements, most of the teams used very general theses about the teacher and working teams did most of the work of developing behavioral descriptions. Thus the majority of the actual behavioral description of the teacher resides in masses of behavioral objectives.

We consider it vital that more complete and functioning working models of the teacher be created as the programs are developed and implemented. As much as is possible, the performance models need to be:

1. Dynamic models which can unify vast, complex programs and give clear guidance to developers. (The Pittsburgh Model is very strong here.)

2. Rationalized conceptualizations which relate the components of teaching to one another and, thus, lead naturally to related program components. (Florida State's conception is heuristic.)

3. Clearly related to the systems which surround the teacher--material, other personnel, support systems, and decision-making systems. (The ComField Model is heuristic in this regard.)

4. Provide some guidance for the task analysts who will break down the major elements of teaching behavior into a clarified system of objectives. (Toledo provides a useful example here. Its description of the teacher provides clues for analyzing and sequencing behaviors. Georgia does also, but to a lesser extent.)

In addition, development needs to ensure that a much wider range of theories about teaching enter the models which tend at present to emphasize very direct, presentational methods of teaching. Many other strategies are alluded to and there is room for them in the form of the programs, but the conception of the teacher needs to make much wider and more imaginative use of a vastly broader range of teaching behaviors than has so far been the case.

# Chapter Four

## Program Strategies: Making Systems Models Feasible on Their Own Terms

by

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In this chapter we attempt to characterize the program strategies and to outline ways of increasing their power by improving them on their own terms. Because the programs were constructed in units related to objectives expected to contribute to the behavioral elements of teaching, the discussion of program strategies cannot reasonably be separated from the conceptions of the teacher, so there is some necessary redundancy between this chapter and Chapter Three. Program strategies are made up of the structure and substance of the programs--the types of components which are itemized and the content each component focuses on--and the curricular strategies--the organization and methods of instruction which are utilized.

All of the programs use a modular curriculum organization; the training of the teacher is organized in sets of units each containing specific objectives, alternative activities, and evaluation procedures. To this extent they employ a common strategy, one which cannot be implemented for a large number of students unless it is accompanied by contemporary management technology to relate the modular units to students and provide feedback about the progress of individuals and the successful and unsuccessful elements of the program. Within the common modular approach there is room for many strategies of learning and a wide range of content. A series of analyses were made of the program strategies and these are reported in this chapter in the following order:

1. A classification of program components by content.
2. An analysis of ways of increasing program unity and decreasing fragmentation within modular structures.
3. A discussion of the use of cybernetic psychology and simulation in systems approaches.
4. An identification of promising practice for personalizing the education of the teacher in managed, modular curricula.
5. An identification of strategies for improving several of the models on their own terms.

## A Classification of Program Components by Content

We will begin by comparing the programs in terms of the gross content and strategies components that make them up. Because an important consideration in implementing the programs is the extent to which their components differ from the components ordinarily used in teacher education programs, Table 4.1 (see pages 4.4-4.6) is constructed to permit a comparison of the content of the model components with those typical of teacher education programs in recent years. The chart also includes an estimate of the distinctive approach of each program.

Georgia was selected as representative of the programs of relatively homogeneous modular structure, which include Toledo and Florida State. Michigan State was selected because it deals in great detail with a comprehensive four-year liberal arts/professional training program. Syracuse and Massachusetts represent less homogeneous training programs which also characterize ComField and Wisconsin.

To make the chart, the components of the approach described by Lindsey and Stratemeyer[1] as the recommended or prevailing program of recent years were identified. Then, Michigan State components were identified. Those the same as the traditional ones were identified as such and those that differed were added to the list. The other programs were treated in a like manner, resulting in a list of all components arranged so that it was clear which components appeared in one or more of the programs.

In addition, the general approach of each component (its teaching strategy) was noted. For example, the Syracuse "philosophy" component employs "seminars and readings" as its strategy. The "behavioral" component from the Massachusetts model uses "micro-teaching and feedback."

In addition, several general strategies were employed to a great extent in several of the programs. One we characterized as a "modular, performance-oriented approach with self-pacing by the student." Where this strategy was used, a check mark (✓) appears. In addition, if the student is given options that "personalize" instruction as well as pace it, the check is crossed (✗). Thus, in the Massachusetts model, the "science" component is modular, personalized, and uses a strategy of laboratory workshops and courses.

Looking over the chart, it appears that most of the new programs included the components of the Lindsey-Stratemeyer approach, but included some others as well. A few of the "traditional" components missing in the present models will no doubt appear as the development phase continues. Presently Georgia includes physical education but the others don't. Almost certainly, however, the others will decide to provide physical education, as development takes place.

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[1] A. Margaret Lindsey and Florence B. Stratemeyer, Working with Student Teachers, New York: Bureau of Publications, Teachers College, Columbia University, 1958.

The programs have distinctive characteristics that color all their components. For example, the Michigan State program is held together by its massive storage and management system. This system makes all program elements visible to all faculty and students and permits various program changes to be made easily. As some of the other models are further developed they will use similar systems. Syracuse is characterized by the intent-action-feedback paradigm (described in Chapter Three), which provides students and faculty with continuous knowledge about the appropriateness of actions and outcomes to intentions. Various permutations of micro-teaching anchor the Massachusetts approach which also has big helpings of human relations training throughout. Georgia is characterized by its steadfastly modular approach and behavior-modification training techniques.

The great similarity of program content to traditional programs should make implementation easy on one count, since the programs bring relatively little new content to teacher education. On the other hand, it is odd that a larger variety of components did not arise from the effort to create new teacher education programs.

Odd, that is, unless one considers that in most cases the projects to create the models were organized in teams according to the traditional component areas. As pointed out in Chapter Three, most of the model-builders did not construct a general model of the teacher and then break it down into component elements. Rather, a general idea of the teacher was created as a guideline to the development teams (as the Clinical Style of the Michigan State approach) and then teams, already organized according to major areas of development, proceeded to work constructing the behavioral elements (objectives) of the program and the activities which would be related to them. Thus the organization of the projects predetermined that most program components would be traditional. Only when a development team was organized to include new areas (as Massachusetts with "behavioral" and "human relations" components) could they arise.

However, the program strategies uniformly included a modular organization. This is the major departure from the traditional procedures and permits an individualization and personalization not remotely possible in the seminar/course/practice-teaching structures of the traditional programs. Also, conceiving the teacher as a behaviorist (see Chapter Three) greatly influenced specific program content.

### Against Fragmentation: A General Feasibility Problem

In large modular program structures a persistent problem is to establish relationships among modules so that the environment which is presented to the student has an integrated and coherent character.

Soltis suggested that the program models could be classified as:

1. "Atomic," in which modules as presently specified appear to be almost completely independent of each other except for

Table 4.1. Program Models by Content of Component, Characteristic Approach, and Comparison with Typical Teacher Education Programs.

| Component | Typical Program | Michigan | Syracuse | Massachusetts | Georgia |
|---|---|---|---|---|---|
| (Characteristic Approach) | | (Clinical Style) | (Intent-Action-Feedback) | (Micro-Teaching, Human Rel. Train.) | (Job Analysis, Elementary school goals) |
| Human Relations | | ✓✗ | ✓Semi-programmed texts, Feedback tape analysis | ✓✗Interview, Analysis, Self-awareness training | |
| Behavioral | | ✓✗ | ✓Seminar, Problem packet seminar | ✓✗Micro-Teaching & Feedback | ✓Specified in all components (affective) |
| Aesthetics | Courses, Observation, Development of units | ✓✗Workshop, Readings, Writing, Discussion to compare aspects of issues | | ✓✗Demonstrations, Personal exploration | ✓Lab |
| Language Arts | " | ✓✗ " | ✓Modular instr., Self-instr. from programmed mat'l | ✓✗Micro-teaching, Classrooms-learning center | ✓Lab |
| Social Studies | " | ✓✗Real & simulated sit'ns employing decision-making modes of social scientists | ✓ " | ✓✗Use of model from Social Science | ✓Lab |
| Science | " | ✓✗History of man's view of world-patterns of science | ✓ " | ✓✗ Lab, Workshops, Courses | ✓Lab |

| | | | | | |
|---|---|---|---|---|---|
| Mathematics | " | ✓ " | ✓ " | ✓ Programmed texts, Lectures, Videotape. Discussion groups | ✓ Lab |
| Foreign Languages | | | | ✓ Programmed text, Language house, Radio & TV, Travel | ✓ Lab |
| Pre-School | | To be developed | | ✓ Self-awareness encounters, Clinic, Children's home | Lab |
| Evaluation | Course work in lab, Observation | ✓ Assessment, feed-back, Built-in checkpoints | ✓ Seminar, Problem packet seminar | | Specified in all components |
| Media | | Graduate level ✓ | | | ✓ |
| Supervision | | | | ✓ Simulation, Videotaping, Micro-teaching, Programmed instruction | |
| Child Development (Human growth & Development) | Course work, Lab experience, Observations | ✓ Environmental systems of pupils explored, Study of school as social institution | ✓ Seminar, Analysis of videotapes | | ✓ |
| Philosophy | | | ✓ Seminars, Readings | | ✓ |
| Health and Physical Education | | | | | ✓ |

Table 4.1. Continued

| Component | Typical Program | Michigan | Syracuse | Massachusetts | Georgia |
|---|---|---|---|---|---|
| Laboratory Units (Clinical experiences, Student teaching, Internship, etc.) | Student Teaching (Fulltime for 1/4 of school year | ✓Tutorial, Seminar, Team-teaching, and Internship (1 yr.) | ✓Choice and use of Instructional materials, part-time student teaching senior year, Activity in teaching centers | Internship until competence | ✓Internship |
| Additional elements |  | 3 main components Liberal education, Prof. use of knowledge, & Scholarly modes of knowledge |  | Alternative routes always provided |  |

their common membership in a management system.

2. "Molecular," in which there are some connections or systems for integration, but the integrated clusters are not connected with one another.

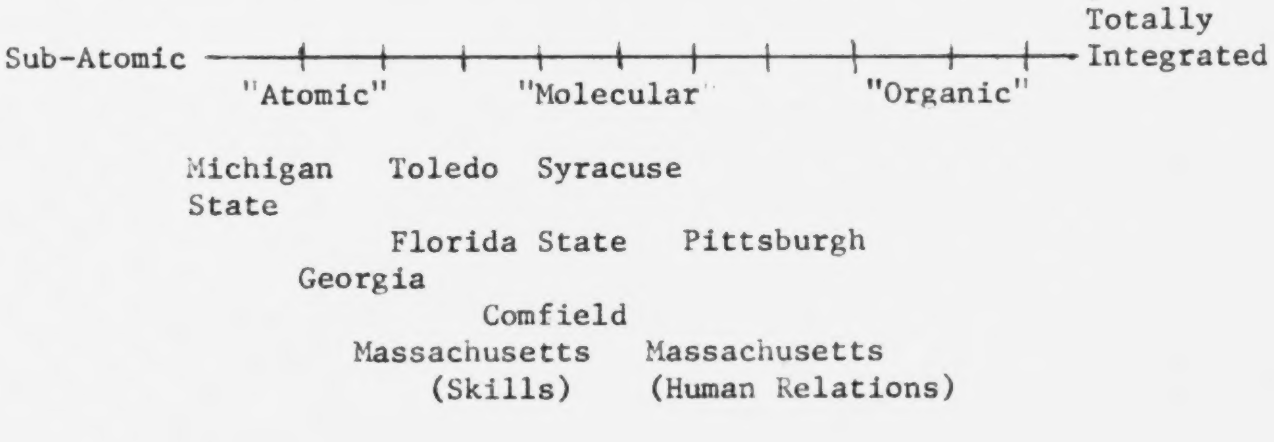
3. "Organic," in which they are explicitly related and seen in terms of interrelated functioning in the individual.

In our view the organic level is most desirable and increases the feasibility of a model from the point of view of all parties.

It cannot be achieved without an integrated, working, "performance" model of the teacher. As indicated in Chapter One, only Pittsburgh of the eight models which we analyzed remotely approached a working model, and that was achieved with a narrow, specific view of the teacher (not a criticism!) which many might not accept or, if they did, might feel should be complemented by other types of teachers.

Thus, most of the models would have to change their conceptions of the teacher in order to be able to organize their program organically. The remainder of the programs we classify as follows:

Figure 4.1. Programs Classified by Integration of Modular Elements

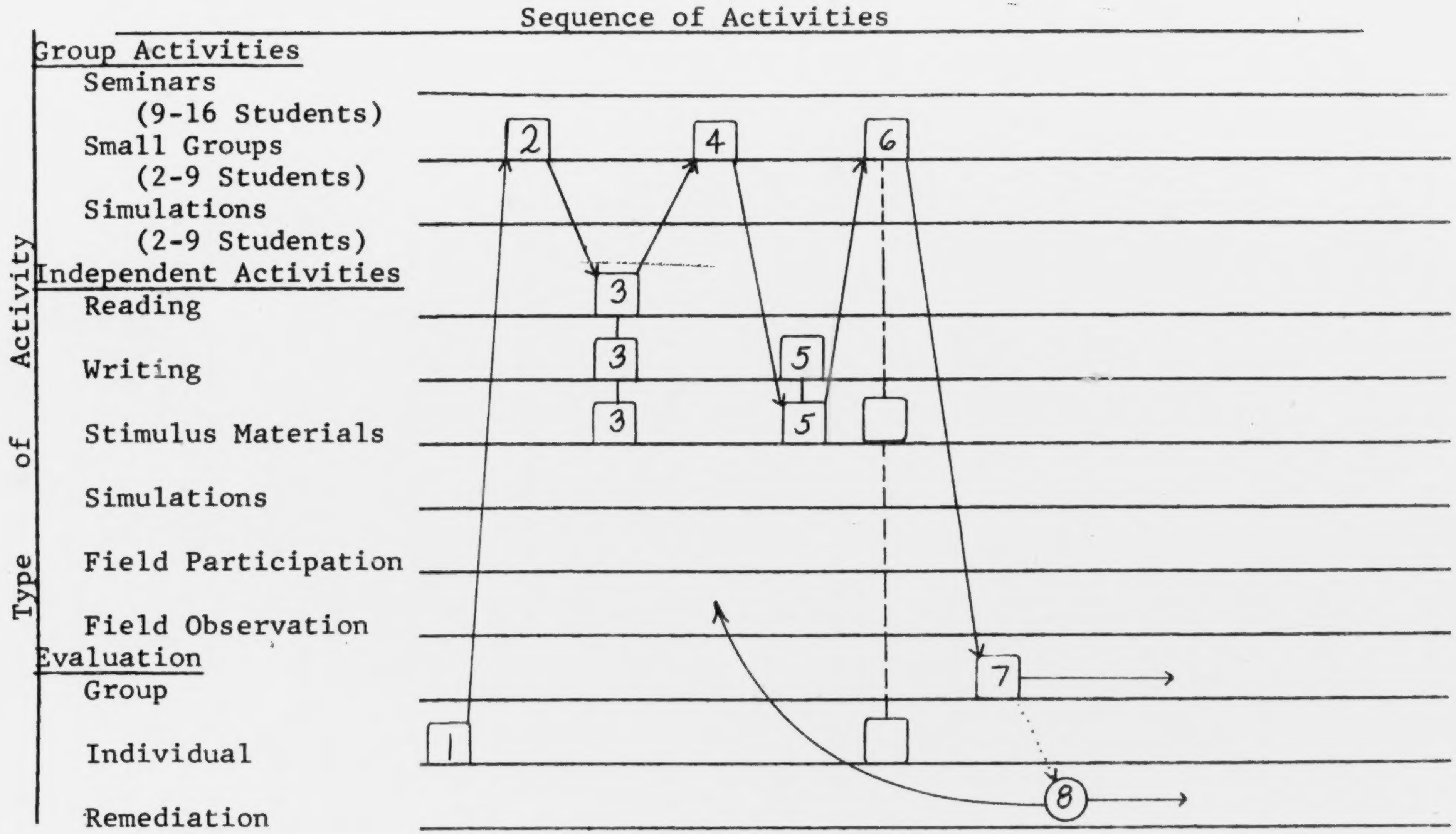


Integration of elements can be achieved in several ways by designing types of linkages which can be used, during development, to specify interrelationships among program elements.

The Syracuse Model had several devices which could greatly enhance the integrated nature of several of the other programs. This was especially true of Michigan State, which with its useful storage system, could advance its entire structure to the molecular and perhaps the organic stage, simply by employing this device, if the linkages were related in turn to the "clinical style."

The Modular Flow Chart of the Syracuse Model (Figure 4.2, see page 4.8) illustrates their system for relating clusters of activities pointing to an objective or group of objectives. It serves, during development, as a system which reminds the developer of the range of activities available to him and helps him relate a variety of modes of instruction to each other to develop a particular competency or group

Figure 4.2. Modular Flow Chart TTP-16


Sequence of Activities
Type of Activity
Group Activities
Seminars
(9-16 Students)
Small Groups
(2-9 Students)
Simulations
(2-9 Students)
Independent Activities
Reading
Writing
Stimulus Materials
Simulations
Field Participation
Field Observation
Evaluation
Group
Individual
Remediation
1
2
3
3
3
4
5
5
6
7
8

Syracuse University, Specifications for a Comprehensive Undergraduate and Inservice Teacher Education Program for Elementary Teachers (OE-58016) Washington D.C.: USOE, 1968, p. 282.

of related competencies.

Such devices could relate activities pertaining not only to one domain of development but to several. For example, in the Massachusetts Model, sequences of activities within the behavioral, human relations, and content areas could be related to each other through an augmented system such as was used by Syracuse.

In a sense, what this type of device does is ensure that the concept of module includes only meaningful units of activities so that the student is not thrown into a mass of activities over objectives too small to be functionally meaningful.

There are several other ways in which well-developed elements of some models can be employed to enhance the structure of other models.

## Simulation and Cybernetic Psychology

Most of the models provide explicitly or implicitly for considerable use of simulation in training activities. ComField is especially thorough in the integration of a teaching laboratory throughout the program and represents the most elaborate description of the use of simulation throught teacher education to date, although much specification remains to be done.

The rationale for the use of simulation is that "situations less complex than the reality of the classroom" permit the teacher to master skills which are very difficult to learn in the taxing chaos of the classroom and, derivatively, help him prepare for that complexity by achieving competency before taking responsibility for the education of children.

Simulation, despite its limited use to date in teacher education, has been used with considerable effectiveness in the training of such complex personnel as airline pilots and high-level military tacticians. There is little doubt of its potential in the training of teachers.

In all previously successful uses of simulation the basis of the simulation system has been a cybernetic model of the functionary (broadly defined) who is to result. This does not mean that the description of the functionary has to be in terms of a rigid administrator of pre-set procedures. On the contrary, one of the most interesting potentials of simulation is for the training of problem-solvers. In fact, there has already been at least one experimental use of simulation in teacher training in which the goal was to increase the flexibility with which the teacher would perceive the learner and modulate his behavior during interactive teaching.[1] However, it is very difficult to plan for the extensive use of simulation unless there is an effectively functioning model of the performer who is to emerge. Development of the simulation experiences specified in the program models will have to be accompanied by the creation of more complete and unified working models of the teacher (as indicated throughout Chapter Three). A little elaboration will illustrate the point. As specified in the present versions of the model, simulation can function to:

---

[1] Bruce R. Joyce, Peter Dirr, and David E. Hunt, "Sensitivity Training for Teachers: An Experiment." The Journal of Teacher Education, Vol. XX, No. 1 (Spring, 1969), pp. 75-83.

A. Introduce new areas of development. (The realistic, controlled confrontation of simulation helps the trainee become aware of the need to learn and clear about how the new learning will relate to his performance as a teacher.)

B. Provide for the operationalization of learnings in the form of teaching performance. (Learnings from other modes become integrated in performance.)

C. Provide for the integration of several domains of learning. (Simulation can present opportunity for the successive incorporation of new skills and other learnings into operational performance.)

D. Provide for a gradual increase in complexity so that the developing teacher can deepen and extend his skill.

E. Personalize the development of the clinical style. (ComField has significantly grasped the possibilities of simulations which leave much room for personal style while requiring precision of performance and accountability for results.)

If we consider only "C," the integration of learnings from several modes and domains, and "D," the staging of complexity, it is apparent that neither of these can be achieved without a cybernetic conception which relates growth in several domains and conceptualizes the possible stages of complexity.

## Personalization of Learning

Aside from the considerable power which modular curriculum structures have for facilitating the individual pacing of learning through pre-set sequences of activities, a feature which is shared by all the program models to a considerable degree, to what extent do they personalize the education of the teacher, helping him develop his uniqueness and actualize a personal style of teaching?

The chart on page 4.11 gives our estimate of the relative power of each of the program models to personalize the teacher's education.

Pittsburgh, Syracuse, and ComField each employed devices which could be emplyed to increase the personalization of the other models.

Figure 4.3. Extent of Potential Personalization of the Models for Elementary Teacher Education

← Maximizes Personalization　　　Minimizes Personalization →

Pittsburgh
Syracuse
ComField
Michigan State
Florida State
Toledo
Massachusetts
Georgia

Pittsburgh arranged a faculty-student relationship which provides for regular program-planning for each student with continual re-setting of goals and development of means suited to the personal style of the teacher-candidate. While the mechanics of this are not by any means fully worked out, it seems feasible to develop a counseling system which could provide, in any model, for counseling relationships within which faculty could modify experiences to suit the candidate or help the candidate plan and carry out individual learning activities within the resources of the program.

Syracuse employed two primary devices. One was the general conception of the teacher as a problem-resolver, a person who would use general professional knowledge and skills to solve problems but who would have the personal capacity to generate ways of approaching problems. Thus individualized and personalized experiences alternate through the program.[1]

Second, Syracuse provides for a "self-directed component" which they describe as follows:

> Self-Directed Component. This component is intended to foster independent, self-directed activity oriented ultimately toward professional ends. It has considerably less structure than the preceding components particularly with respect to the subject matter which will make up the component. It does have the structure provided by specific goals and the supporting instructional situations which characterize the component. The essential task for the student in this component is to (a) determine what changes he would like to see take place in the children he teaches, (b) describe these changes behaviorally, (c) determine what specialized training is needed (in addition to that provided in other components of the model program) to help him in the accomplishment of these goals, and (d) to accomplish such ends as he has specified with the pupils he teachers during his resident year.

> The component provides a firm helping relationship in the performance of this complex task. The student selects a counseling-advisor with whom he works on a regular basis. This relationship between student and counselor-advisor is an enabling relationship combining the talents of the counselor with the talents of a generalist in the field of elementary education. In addition to this one-to-one relationship with a counselor-advisor, the student may participate in one of the student-controlled enabling seminars of about twelve students each. These activities are to be supplemented by a student-controlled weekly newsletter for expressing ideas and concerns about the profession and the program.
>
> The student develops a "planning and goals" paper around which his self-directed activities evolve. He is ultimately expected to realize these plans and goals through his own independent activities. The goals toward which this component work are the goals of professional independence which will enhance the dignity, integrity, and autonomy of the student as a teacher, help him take responsibility for his own learning, and help him to independently modify his own ideas, values, and behavior. From this self-directed activity would come (a) continued increased understanding of the unique qualities of self as a teacher, (b) the development and implementation of a personalized set of educative experiences culminating in a professional specialization that transcends the general training gained in the basic program.[1]

ComField makes effective use of a teaching laboratory which utilizes many simulated teaching tasks and encourages the development of a personal teaching style as well as the mastery of prescribed professional knowledge and skills. The simulation laboratory has considerable potential in this direction.

## Individual Program Strategies

The programs are so massive that to characterize each of them adequately in a report of reasonable length and clear enough structure is out of the question unless one severly limits the perspective he uses. The perspective we have chosen attempts to identify the uniqueness of each model approach and to ask the question: "How can this model be improved so that its unique strength is enhanced?"

This question appeared to us to be of vital importance to the developers of the models, since the basic question for the developer and implementer of a model is, "Aside from the systems approach, with the emphasis on performance goals, a modular curriculum structure, and management oriented toward individualization and quality control, features shared by all the programs, what is the unique strength of each model and how can that quality be capitalized on?"

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[1] Syracuse University, Ibid., p. 25.

Hence, in this section we attempt to identify the most prominent and potentially unifying element of each program model and recommend procedures which are likely to increase the feasibility of the model by capitalizing on its essential strength. Many of the recommendations for each model are borrowings from other models.

## Taking the Models on Their Own Terms

To make a fetish of internal consistency is an ugly form of pedantry. If we avoid fetish, however, there are some striking advantages to educational programs that have a high degree of internal consistency, for reasons that are much more than the brandishing of theoretical elegance. An educational program that stands for something both in terms of mission and means can have a unified power and clarity which greatly increases its value.

In this section, we attempt to characterize the essential "model for the model" of each of the projects and discuss the extent to which the program which is specified accords with that model and what would need to be done to bring the program more fully in line with what seems to be the fundamental conceptions that give it its greatest strength. For those who would further develop and implement these models we feel that this may be the most valuable enterprise that they can engage in. All of the other criteria by which we look at the feasibility of the models and most of the criteria by which the themselves looked at feasibility during their Phase Two activity are external to the structure of the individual models. There is validity in the use of these external criteria and nearly each one of the models can benefit by applying them during the feasibility-making stages, but to give a program maximum strength and integrity it should be developed so that the "model of its own model" has full expression in the program that finally comes into existence.

### Florida State University

The Florida Model is philsophically built on a concern for a teacher of ten years from now.

The rationale for this model program is based upon:

1. predictions of what society and education will be like by 1978;
2. inferences about the nature of teaching and the role of the elementary school teacher by 1978; and
3. implications for the preparation of elementary school teachers.[1]

---

[1] Florida State University, A Model for the Preparation of Elementary School Teachers (OE-58018) Washington D.C.: USOE, 1968. p. 3.

They thus begin with a rather sound idea that if we plan a teacher education program today, its graduates will be at about the five-year point in experience about ten years from now, and, at a minimum we need to plan so that their preparation will be suitable for the world in which they then find themselves. Florida spent considerable effort in speculating about the future and the kind of person who would be able to operate effectively in the schools of the future. We feel that this is the essence of their model--an attempt to use systems planning to forecast the future and that systems procedures to develop training modes which would be appropriate for the future.

There are certain ways in which Florida fulfills its intricate model very well. One of these ways is by using a variety of modes of instruction, thus ensuring that the teacher in his own training will encounter many technologies and experience many strategies for learning and teaching, thus learning at first hand how they can be orchestrated in a fully contemporary way (see Figure 4.4, page 4.15). Since all of these modes emphasize self-paced experiences and criterion-referenced performance evaluation and all the activities are monitored by a computerized management control system with feedback capability, there is a definite future orientation to the texture of the Florida Model.

However, when we look at the substance of the modules themselves, to the kinds of teaching skills which will be taught and the kinds of knowledge which will be taught to the teacher, the picture is not so future oriented. It is, in fact, not very different from what has been the content of teacher training programs for at least the last forty years, with some updating of content. The conception of the teacher, in other words, does not seem to be as future oriented as does the conception of the need to prepare him in such a way that he will have a future orientation. Furthermore, there is very little provision for the development of reflective or creative thinking in the Florida Model. A teacher who would be comfortable in the fast-emerging future society which is depicted in the early sections of the Florida document would surely need to be philosophically prepared to reflect on what was happening to him, to gain some historical and philosophical perspective on the events that surrounded him. Further, he should be prepared to help others behave rationally while living in the midst of such rapid and unpredictable change.

We believe the Florida Model would take on greater strength if, as it is redeveloped for implementation, the view of the teacher is reconceptualized in a more forward-looking way. That conceptualization should, in our opinion, conceive of him as a philosophical person using his technology and building on it a new technology, but with the reflective- and creative-thinking capability to master the changing futuristic environment in which Florida believes he will find himself.

## The ComField Model

The essence of the ComField Model lies in the conception of the teacher as an instructional manager who is able to bring about learning in children. In its program methodology we can see the desire to help

Individual Activities

| | |
|---|---|
| Cmp | Computer Interaction |
| Int | Interview and Consultation |
| IS | Independent Study |
| LAV | Laboratory and Audio-Visual |
| Wr | Writing |

Group Activities

| | |
|---|---|
| Dsc | Discussion Group |
| Lct | Lecture |
| Prj | Project |
| Prs | Presentation |

Field Observation

| | |
|---|---|
| Ocl | Observation in Class |
| OO | Observation in Other Site |

Simulation

| | |
|---|---|
| SmO | Observing Simulated Situations |
| SmP | Producing Simulation |

Teaching

| | |
|---|---|
| Tcl | Classroom |
| Tsg | Small Group |
| Tt | Tutorial (one student) |

Figure 4.4. Experience Codes

---

The Florida State University, A Model for the Preparation of Elementary School Teachers,(OE-58018) Washington D.C.: USOE, 1968, p. 55.

the teacher develop a personalized style for managing instruction and for providing the management-support service necessary to instruction. The use of the laboratory for training is very much in line with their view of a teacher and how he should be trained, for it provides many opportunities to develop both a personal style and technical proficiency. In other words, the use of the laboratory provides the setting in which the teacher can be trained and evaluated in a way consonant with their image of the teacher.

However, there are several unresolved questions within the ComField structure which, if they were resolved, would greatly increase the potential power of the model. First, they stress throughout that the teacher candidate will be able to negotiate many of the activities that he will pursue as he tries to prepare himself, yet the objectives of the teacher education program are derived from the specification of the kinds of objectives that might be set for elementary school students and the kinds of conditions that would be likely to achieve those objectives. The teacher presumably will be trained to produce those conditions and to evaluate the outcomes. This means that many of the objectives and activities will be specified for the teacher. It is not explained how a system external to the teacher candidate would be reconciled with the intent to have the teacher largely determine the nature and course of his own experiences. There is recognition within the report that some objectives are required of all teachers and some simply of those who are going to be specialists or work with specific kinds of children, but this acknowledgement does not resolve the basic question, which is how within a systems design, does one allow for student negotiation. There are a number of potential solutions to this problem. The ComField Model developers might look at the kinds of devices generated at Syracuse to approach a similar problem. For example, in the final report on the ComField Model, we find the definition of teaching style as well as the specifications for the personalization of the process of teacher education:

> Teaching Style
>
> As used in ComField, the concept of teaching style refers to the matter of integrating and synthesizing the various professional competencies develop through ComField into a unique and personally relevant approach to teaching. It is hypothesized that two factors are necessary to bring this about: (1) a knowledge of alternative styles, and (2) an opportunity to practice alternative styles.
>
> Specifications
>
> 1. Each student shall be exposed to alternative teaching styles through models.
> 2. Each student shall explicate his own teaching style.

3. Each student is to provide a rationale in support of his preferred teaching style.

4. Each student will have a series of nonevaluative interview within which to explore the meaning of behavior observed in the laboratory and practicum for the learner's definition of teaching style.

Specifications for the Personalization Process

There are no specific, independent learning experiences within the ComField instructional program designed to bring the personalization of professional competencies about. Personalization experiences are always a part of an instructional system designed to produce a given competency and will take whatever form that is required to permit the exploration of personal relevance or meaning within that system. (See Figure 4.5, page 4.18) Almost always it will involve contact with another person, however, either a peer or a member of the staff; and it will almost always focus upon the affective dimension of that which is being learned. Since there are no specific provisions for the process and since it has been described in some detail as it links to the development of professional competencies only the basic features of the process will be described. These may be considered as specifications.

1. Instructional activities designed to increase students' awareness of their personal qualities and the implications of these for teaching style are to be included as an integral part of the program.

2. Assessment of all cognitive outcomes is accompanied by an assessment of the commitment held toward them.

3. Assessment of student performance is accompanied by an assessment of the congruence between behavior and that basic personality characteristic of the student.

4. Performance below criterion level leads to assessment of the basis for the failure and consequent remediation. Dismissal is more nearly based on an apparent lack of potential to perform the task rather than a punitive or arbitrary measure.[1]

The last statement in the description of the personalization process at the top of page 104 says "performance below criterion level leads to assessment of the basis for the failure and consequent re-

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[1] Northwest Regional Educational Laboratory, A Competency Based, Field Centered, Systems Approach to Elementary Teacher Education (OE-58020) Washington D.C.: USOE, 1968, Volume I, pp. 102-103f.

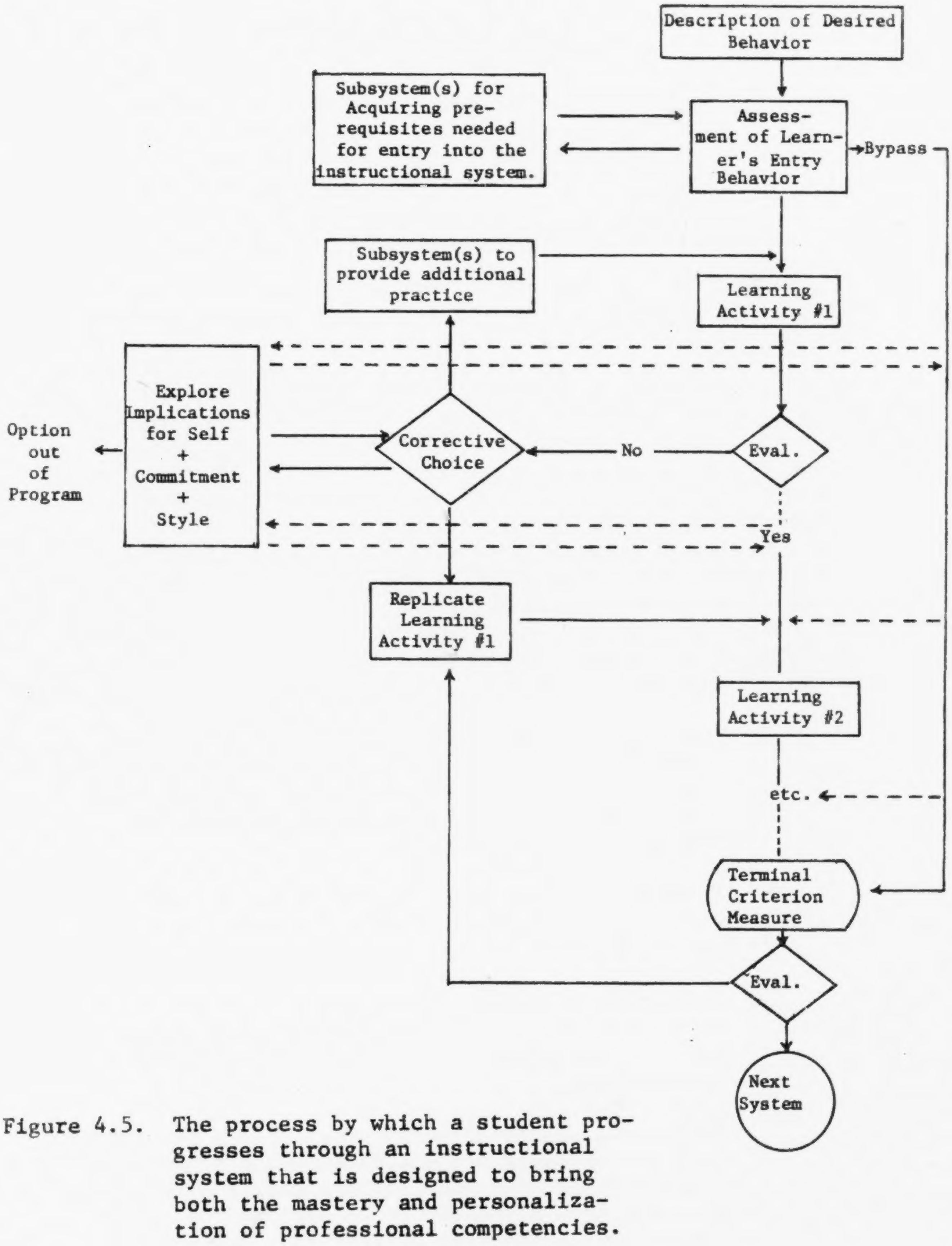
Description of Desired Behavior
Subsystem(s) for Acquiring pre-requisites needed for entry into the instructional system.
Assessment of Learner's Entry Behavior
Bypass
Subsystem(s) to provide additional practice
Learning Activity #1
Explore Implications for Self + Commitment + Style
Option out of Program
Corrective Choice
No
Eval.
Yes
Replicate Learning Activity #1
Learning Activity #2
etc.
Terminal Criterion Measure
Eval.
Next System

Figure 4.5. The process by which a student progresses through an instructional system that is designed to bring both the mastery and personalization of professional competencies.

mediation. Dismissal is more nearly based on apparent lack of potential to perform the task rather than a punitive or arbitrary measure." Evidently then, within the specifications for personalization we have provisions for "deselecting" students who do not meet previously specified performance criteria. This is a strange kind of personalization.

The Syracuse personalization component, from which we think the ComField developers could borrow profitably, while it is very loose and somewhat unspecific in many places, is one way of providing for the reconciliation between the personal needs, interests and aptitudes of the student and the relatively rigid character of a modular systems model which is accompanied by quality control procedures.

The Teachers College system of organizaing students into inquiry groups which administer most of the teacher education program to themselves with the assistance of faculty counselors also provides a great deal of room for the kind of personalization that ComField says it wants but does not seem actually to provide, because it permits students to redefine goals and means while they move through the program. Quality control is vastly complicated by such a procedure.

The Michigan State storage-and-retrieval system for modules also provides a matrix in which personalization might be achievable. By making all faculty and students aware of what modules reside in the information-storage-and-retrieval system the personalization of a program becomes much easier, for the structure of the program becomes transparent and can be matched much more closely to the style of the individual. Without such a matrix and a guidance component to help the student retrieve and learn the modules that are most appropriate to his needs, the flexibility of the system model with respect to individuals would remain more apparent than real.

## The University of Massachusetts Model

The Massachusetts Model emphasizes in philosophy the need for the individualized perparation of the teacher and an intermingling of human relations skills, teaching skills, and content knowledge. However, these are described so separately that the Massachusetts Model does not seem to have an essential point of view which unifies it or which represents its character or the character it would be likely to take on during development. As is pointed out in another place, a suprisingly large number of the Massachusetts modules do not have objectives which reach our criteria for behaviorality and, thus, they could not be implemented as they presently stand without tremendously greater specification. Furthermore, within many of the important components such as the teaching skills or the "behavioral" component, the skills often seem trivial compared with the rather strong statements of needed teaching strategies which characterize some of the other programs such as Pittsburgh, Syracuse, Michigan State, and the ComField Model. The objective of one module, for example, is "to get the teacher to ask as many questions as possible during the lesson, so that a beginning teacher's dependency on the lecture method can be overcome."[1] This objective is disturbingly chaotic. Furthermore, to ask a teacher to "ask as many questions as possible" seems irrational--does he do this regardless of what the children do? Also, does the instructional alternative (four micro-teaching sessions) have any real chance of reducing someone's dependence on the lecture? In other words, we had a good deal of difficulty determining the essential character of the Massachusetts Model.

Moreover, the program is almost completely without a philosophy, although it does deal with the affective development of the teacher to a laudable extent. Dealing with emotions without a philosophy can become unnerving at times. A module, for example, has as its objective within the area of race relations "the ability to recognize and deal with fear and sexual attitudes."[2] The instructional alternatives are as follows:

> The trainee will participate in a fantasy storming session about fear of physical attacks by blacks. Sessions--all white--will be hour-long and run for six times.
>
> The trainee will participate in an all-black fantasy storming session about fears and hatreds of whites. Six sessions, one hour long.
>
> The trainee will participate in a fantasy storming session about fear of physical attacks and sexual abuse.[3]

The team that examined this model is agreed that the ability to recognize and deal with fear and sexual attitudes in a racial context is very unlikely to be changed very much by six hours of fantasy storming sessions, and it seems almost a Kafkaesque world that would suggest that such might be true. Certainly fantasy storming sessions might open up such attitudes so that people could articulate them, and that might be the beginning of symbolic control, but if one really has fear, sexual fears particularly, that are racially linked, there will be no short-term course of therapy, even intensive therapy, that will change those fears; to pretend so is ridiculous. The Massachusetts Model is full of such absurdities. On one level they sound attractive because the Massachusetts Model certainly does deal with racial issues, ethnic issues, and one's personal need to develop a fully functioning self in a world which is laced with racial, ethnic, and economic class conflicts. However, when one looks at the specifications and finds out that a modular curriculum has been presented in which relatively short instructional systems are supposed to be effective in those areas, one has to questions the sincerity of the entire model.

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[1] University of Massachusetts, Model Elementary Teacher Education Program (OE-58022) Washington D.C.: USOE, 1968, p. 264.

[2] Ibid., p. 258.

[3] Ibid.

The whole section on sexual awareness in the Massachusetts program is similarly suspect. For example, let us look at sections from the final report of the project, pages 252-256.

In this entire section, the Massachusetts Model, quite laudably in our view, gets into areas which are extremely important in the functioning of the individual, both personally and as a teacher, and the designers of the Massachusetts Model do not shrink from a substantive involvement with sex or anything else that they think is important to the development of the individual.

However, their performance criteria are highly unspecific and their activities are not clearly related to the objectives. In areas as critical as sex, this seems to us to be a fatal blow to the feasibility of the program as it stands. The more critical and personal the areas, it seems to us, the more we must strive to be very specific in the description of objectives and activities, and the clearer we must be about the potential relationships among them. Evaluation in areas as critical and personal as these becomes a matter of the protection of the student as well as the assessment of him.

In addition, much of the material in those areas seems to be very loosely constructed. For example, in terms of the physical awareness of sexuality, the instructional alternatives are:

> The teacher trainee will participage in an Esalen-type seminar or series of seminars which centers on the freeing of the body and its sexuality.
>
> The teacher trainee will teach a ten-minute micro-teaching lesson on the discoveries he made in the above described seminar(s) noting especially the part of his understanding that is significantly nonverbal.[1]

There is really only one instructional alternative here and it occurs in two phases, one of which is quite extensive (the Esalen seminar) and the other of which is simply a ten-minute lesson. How these relate to each other is not specified nor are we told what is to be done with the ten-minute episode in order to help the person perceive what he has learned and develop some views of himself in relation to the important area in question. A more powerful philosophy in the Massachusetts Model, we believe, would have avoided superficiality and disconnectedness of this sort. If one really cares about his trainee, one simply does not put him in encounter groups and then assume that the objectives of those groups have been achieved. He may use encounter groups to open up personally important areas and then provide experiences to help the student incorporate those experiences into his overall pattern of functioning.

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[1] The University of Massachusetts, Ibid., p. 254.

In short, to live up to its rhetoric, Massachusetts needs a philosophy. If it gets that, as well as a more unified model of the teacher during development, it could become a fascinating program.

## The Michigan State Model

The BSTEP Model has as its essence the clinical behavioral style, and it conceives liberal and professional education as contributing in various ways to the development of that style and the individual variations it is likely to have.

The program is well unified around this conception of style, but a tremendous amount more could be done to unify the 2,700 relatively single-purpose modules into meaningful clusters, as is described on pages 4.3 and 4.7. In addition, the modules themselves are extremely uneven with respect to the specification of objectives, pre-requisities, and evaluation. The specification problem is easily rectified in a program which is developed over a longer period of time when there is time for a more adequate quality control than was possible in the eight months in which the original models had to be completed.

To make the essence of the model really powerful, however, the BSTEP developers have to face a very complex and delicate problem, one which, as they resolve it, should have a considerable yield for the improvement of systems design procedures. That is, the extreme disjunction between the program and the clinical style that the teacher trainee is himself supposed to manifest when he has completed the program. A student, in other words, does not live the model he is expected to become, but he lives in a very specific modular structure which is supposed by small increments to bring about the general kind of behavior he is to manifest later. The style of the program does not fit the behavioral style which the trainee is to adopt later.

The solution to this problem should probably be unique to the BSTEP Model, but developers can borrow ideas from some of the other models as they search for their solution. Especially, they might borrow from the Pittsburgh Model, whose program has almost an exact congruence with the type of teacher who is to be produced. It seems to us that it would be possible for the BSTEP developers to create a way in which their program could be administered to the students with the same clinical style that is specified for them. For example, a counselor could propose to and with the student what he should do next, then the student could operate as a self-teacher, or in taking seminars or lectures which are led by others, he could share the purposes of the teacher. He could then further propose, do and reflect once again. In other words, it is not the modular structure of the program which conflicts with the essential model of the program. It is that the modules were not constructed in an organizational matrix that permits the clinical behavior style to be as much a part of the teacher education program as it is later hoped it will be a part of the behavior of the teacher. This, we feel, is a

Figure 4.6. Selected Modules from the Michigan State Model

```
*OBJECTIVES     1, TO DEVISE SUBJECTS, SEQUENCE AND TASKS IN CONCERT WITH 02481 27
                STUDENT IN ORDER TO FULFILL A STATED OBJECTIVE,  TO DESIGN02481 28
                LEARNING ACTIVITIES WITH PUPILS,  2, TO ANTICIPATE OPTIMAL02481 29
                GROUP INTERACTION AND DECISION-MAKING THROUGH CLASS       02481 30
                GROUPING AND LOCATION,                                    02481 31
*EXPERIENCE     1, THE TRAINEE WILL, IN WRITING! A, STRUCTURE A           02481 11
                HYPOTHETICAL INSTRUCTIONAL SITUATION BY SPECIFYING        02481 12
                LEARNER CHARACTERISTICS ≥E,G, AGE, ABILITY, BACKGROUND,   02481 13
                ETC,+, CONTENT AREA ≥E,G, THE COMMUNITY, CREATIVE WRITING,02481 14
                ETC,+, OBJECTIVES AND ENVIRONMENT,  B, ESTABLISH AN       02481 15
                APPROPRIATE CLASSROOM ARRANGEMENT AND GROUPING WHICH      02481 16
                WOULD OPTIMIZE GROUP INTERACTION AND DECISION MAKING,     02481 17
                2, IN AN A-V LABORATORY HE WILL THEN AUDIO TAPE RECORD HIS02481 18
                INSTRUCTIONS AND SYNTHESIZING ACTIVITIES WITH THE         02481 19
                HYPOTHETICAL CLASS,  THE INTENDED RESULT IS A GROUP PLAN  02481 20
                FOR SUBJECT, SEQUENCE AND TASKS TO ACHIEVE THE STATED     02481 21
                OBJECTIVES,  THE TRAINEE IS FREE TO REPEAT THE ACTIVITY   02481 22
                UNTIL HE IS SATISFIED WITH THE PRODUCT,  3, AFTER         02481 23
                SUBMITTING THE WRITTEN STATEMENT AND TAPE, HE WILL RECEIVE02481 24
                FEEDBACK FROM THE INSTRUCTOR REGARDING THE IMPROVEMENT OF 02481 25
                THIS PRACTICE TEACHING EXPERIENCE,                        02481 26
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*MATERIALS      TAPE RECORDING EQUIPMENT IN AUDIO-VISUAL LABORATORY,      02481  5
                TAPES FOR STUDENT USAGE,                                  02481
*HOURS          1                                                         02481  6
*GENERAL        ALL CANDIDATES                                            02481  7
*LEVEL          ALL GRADES                                                02481  8
*FILE           GROUP PLANNING  SELECTING SUBJECT MATTER                  02481  9
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*OBJECTIVES     TO DEMONSTRATE ABILITY TO MAINTAIN EFFICIENT AND EFFECTIVE02675 15
                WAYS OF COMMUNICATING WITH AND CONTROLLING CHILDREN.      02675 16
*PREREQUISITE NONE                                                        02675 17
*EXPERIENCE     TEACHER CANDIDATE WILL OBSERVE CLASSROOM TEACHER≥S+ USING 02675 11
                VARIOUS TECHNIQUES FOR MAINTAINING ORDER, GAINING         02675 12
                ATTENTION, AND CONTROLLING NOISE LEVEL AND WORK HABITS OF 02675 13
                THE CLASS ≥READ OR SIMULATED+.                            02675 14
*SETTING        SMALL GROUP ≥1-12 STUDENTS+  SCHOOL                       02675 10
*MATERIALS      BLANK                                                     02675  5
*LEVEL          ALL GRADES                                                02675  8
*GENERAL        ALL CANDIDATES                                            02675  7
*HOURS          1/2 TO 3/4                                                02675  6
*EVALUATION     STUDENT IS ABLE TO DEMONSTRATE THE USE OF VARIOUS SIGNALS 02675 18
                AND TECHNIQUES TO CARRY OUT DAILY CLASSROOM FUNCTIONS     02675 19
                EFFICIENTLY AND FREE FROM INTERRUPTIONS,                  02675 20
*FILE           FIELD  DISCIPLINE  PRACTICUM                              02675  9
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*OBJECTIVES     TO IDENTIFY DANTE≠S ATTITUDES CONCERNING MAN≠S PROPER     00722013
                RELATIONSHIP WITH NATURE,  TO COMPARE AND CONTRAST THOSE  00722014
                ATTITUDES WITH SOPHOCLES≠ AND JOB≠S ATTITUDES AND WITH    00722015
                ANALYZE THE REASONS FOR THAT RELEVANCE                    00725016
*PREREQUISITE PREVIOUS MODULES                                            00722017
*EXPERIENCE     DISCUSS DANTE≠S ATTITUDES CONCERNING THE PROPER           00722011
                RELATIONSHIPS BETWEEN MAN AND NATURE,                     00722012
*SETTING        SMALL GROUP (1-12 STUDENTS),  COLLEGE                     00722010
*MATERIALS      BLANK                                                     00722005
*LEVEL          ALL GRADES                                                00722008
*GENERAL        ALL CANDIDATES                                            00722007
*HOURS          1                                                         00722006
*EVALUATION     IN SMALL GROUP DISCUSSION THE INSTRUCTOR WILL EVALUATE THE00722018
                STUDENTS≠ ABILITY TO IDENTIFY DANTE≠S ATTITUDES, TO       00722019
                COMPARE AND CONTRAST THESE ATTITUDES WITH PREVIOUS        00722020
                READINGS (ON THE HEBREWS AND THE GREEKS) AND WITH THE     00722021
                ATTITUDES OF THE CONTEMPORARY WORLD,                      00722022
*FILE           MEDIEVAL EUROPE  DANTE  MAN VS NATURE                     00722009
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Michigan State University, Behavioral Science Elementary Teacher Education Program (OE-58024, 3 vol.) Washington D.C.; USOE, 1968, pp. III-58, III-200, IV-99.

relatively easy problem to solve, at least conceptually, but an important, even necessary, one for the BSTEP developers if their program is to realize the considerable potential it has.

## The Syracuse Model

The essence of the Syracuse Model is the intent-action-feedback transaction which is to characterize the life of teachers and students within the model. In the professional sensitivity component, together with the use of decision points and the system for bringing modules together and relating them to each other, the overall design of the Syracuse Model is quite compatible with its essential model and is quite strong in its presentation to the student in that it lives up to what it says it does in terms of the intent-action-feedback model. It is our impression, however, that the model still leaves the student awfully alone in an enormous sea of components and that some of the devices which reside in some of the other models might be used to overcome this at least partially. Especially, it appears that some kind of counselor-advisee group could be formed that could help students relate to each other over their general progress and stimulate one another to get ideas for the many modules in which students can substitute activities for those which are suggested in the model specifications. Such a group would help provide a form for informal feedback that could make the program stronger and a social context for decision-making that could provide the student with solidarity as he works his way through the labyrinthine program.

Although, as usual, we are reluctant to suggest any of our local medicine for someone else's problems, the inquiry groups from the Teachers College Model might well be used within the context of the Syracuse Model to provide some of the psycho-social glue that appears to be lacking and a context in which students can become committed, through the formation of a reference group, to the kinds of ideals which lie at the social and philosophical core of the Syracuse program.

## The University of Georgia Model: GEM

We see the University of Georgia Model as the "job analysis model" because it is a prototype example of one kind of systems planning--the kind which begins with the specification of a job description, makes a detailed analysis of that job, and then systematically plans experiences which are likely to add up to that job competency. The components of the model are, in turn, developed directly from the task analysis. The almost complete absence of any learning theory except behavior modification and the absence of program or module strategies which are based on other theories of learning contribute to the impression of the Georgia Model as a classic of the systems stereotype described by Jacques Ellul.[1]

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[1] Jacques Ellul, The Technological Society, New York: Alfred A. Knopf, 1964.

efficient management systems which can store modules, coordinate support services, relate program elements to individuals, store assessment data, and be used for resource management and program improvement. In the feasibility studies, management technology was uniformly employed to estimate costs, generate developmelnt schedules, and plan the management of implementation.

Individualized, performance-based education for large numbers of students in any area cannot be conceived unless contemporary management systems are employed. In addition, program revision depends on continual assessment with redevelopment of poor program elements and smooth integration of the fresh components into the ongoing program.

All the models assume this and they have specified very similar management systems or implied them by other specifications. The requirements of the systems are exemplified by the Florida State proposal:

> Overview
>
> The computerized management control system (CMCS) can best be conceptualized in terms of the needs of the various users of the system. One type of user will be the trainee and the professorial staff who are assisting the trainee. Their primary interest will be in determining the "location" of the teacher candidate in the training program, what behaviors should be learned next, etc. The system should provide these users with information for counseling the trainee in terms of the instructional alternatives which are available to him. It will also serve as a record of his past performance. (The exact nature of the trainee's record will be described later.)
>
> A second type of potential user of the CMCS is the administrative force which will be required to implement the training program. Their primary problem will be one of allocation of human and material resources. Certain program activities will require the availability of rooms with videotape recorders; others will require small rooms which can be used for group discussions. At certain times faculty members will be required to be on campus, while at other times, they will be needed as observers in the schools and in-service centers. In order to anticipate these needs and prepare for them, the administrators must be fully aware of the resources which are required for implementing the program, and must be able to determine the rate at which trainees will require access to various facilities and resources.
>
> The third type of system user is the curriculum developer and the researcher, the people who are responsible for producing the instructional materials and experiences and for monitoring the success of each of these. It may be

Taking the model on its own terms and not trying to impose other criteria on it, the model has to be judged in terms of the adequacy of the task analysis and the job description. Both of these tasks were carried out in enormous detail. Each of them have flaws which almost characterize the model and which we believe point the way to substantial improvements in the model. First, the task analysis is made, not from an actual job description of a teacher developed from a study of a teacher in action, but from a hypothetical model of a teacher developed by individuals considered to be experts in teacher training. The model was developed entirely at the behavioral level, that is, in terms of sets of behavioral objectives rather than a unified overarching conception of the teacher from which behavioral objectives could be described through a job analysis.

In other words, instead of describing a certain kind of teacher and then breaking that down into specific functions, they described a general functionary called an elementary school teacher and described him in terms of specific behaviors which became the objectives of the Georgia program. In the course of the development and implementation of the model, we believe it would be greatly strengthened if this position were reevaluated and if an overarching conception of the teacher could be developed. There are numerous examples of what this conception might be like in the various models. The Michigan State conception of clinical behavior style, the ComField conception of a person with the competency necessary to bring about certain kinds of learning, the University of Pittsburgh conceptualization of the teacher as an individualizer and the Teachers College conceptualization of the teacher as an innovator--all should be heuristic examples from which the Georgia developers could draw in strengthening their specific model.

Similarly, they describe the elementary school child in terms of specific behaviors rather than in terms of an overarching description from which the specific behaviors could be derived. They did not conceptualize him, in other words, to be a creative thinker or an intellectual or a social activist or a productive citizen or in any of the other ways a student might be conceptualized. They proceeded directly to describe the desired behaviors of the child in rather specific terms, again without an overall philosophical conception under which to describe the behaviors which could be developed. As a result, many of the behaviors within the program seem to have an ad hoc character and seem to be unrelated to one another.

The Georgia development plan calls for the development of a performance module for each of the more than 2,500 objectives of the program. Such a large number with no overall unifying conception leads to a program of extremely "atomic" character, as discussed in an earlier section of the chapter.

## Management Systems

The massive modular programs which will result when the models are developed and implemented depend for their feasibility on extremely anticipated that this group will be composed of a large number of specialists in such areas as content, audio-visual devices, professional writing, curriculum, and educational research. Their interests will not be limited to a single trainee's total score on a criterion test, but rather on the performance of a large number of students on each of the subcomponents within a task. In addition, they will want to determine the relationship between the trainee's present performance and his past and future performances. This information will be used to revise the various activities and materials, and to determine the feasibility of various instructional sequences.

## Two-System Concept

The analysis of the potential users of the CMCS indicates that some of the users, namely the teacher candidates and professional staff, will need to have access to the information which is in the system on an as-needed basis. This suggests that the CMCS should operate in real-time, i.e., the trainee or faculty member would be able to have access to the information via a remote terminal at any time during the day. The information in the system, in turn, should be accurate and up-to-date. On the other hand, the program administrators and curriculum developers have more lead time in terms of their requests for information. For example, the administrators could receive a weekly or semi-weekly status report on all students and an indication of anticipated resource needs. The curriculum developers would work with researchers in planning exactly what data they would like to retrieve from the system in order to evaluate their own materials and activities.

This further analysis of the users and their demands upon the system indicates that not only will they have various lags in terms of the time required to receive information, but they will also be seeking different types of information. The trainee and professor will want information about the events related to a single trainee; the administrator will want information on single events.

Therefore, it is proposed that two interrelated systems be developed. The first system will serve the trainee, the professor and the administrator; it will operate in real-time, via remote terminal access for the first two users, and will operate in batch mode for the administrator. The second system will operate only in batch-mode and will be entirely oriented toward the needs of the curriculum developer. These two systems will be further explicated in terms of systems concepts, input and output procedures, and hardware and software requirements.

The real-time management system will utilize the management tool called Program Evaluation and Review Technique (PERT) for the control of a trainee's program. A review of the management requirements of the program and the management assets of PERT for appropriateness of fit might be desirable....

## Real-Time Management System

The best way in which to conceptualize the real-time management system is to consider a very large PERT network. The entire network represents the total training program for one trainee....The full implication of the use of the network can be shown through a discussion of the five basic types of information which will be included in the system:

1. trainee background information;
2. sequential list of criterion behaviors or events;
3. PERT network and trainee progress records;
4. list of activities available for achieving each event; and
5. estimated times to achieve each objective.

Trainee Background Information. For each teacher candidate, there will be a short record of his skills, interests, and aptitudes as he enters the program. The information in this record will include that information which is most often used in counseling trainees: high school and university grade point averages, various aptitude scores, relevant experiences, and interests.

Sequential List of Criterion Behaviors or Events. A list of numbered events will be inserted in the system so that in addition to indicating that the trainee has mastered event 057, a printout can show that he has demonstrated the ability to use probing techniques.

PERT Network and Trainee Progress Records. A numbered pathway for each student will be established. As a student completes an event the following 20-digit record will be inserted:

1. trainee identification number (3 digits);
2. event identification number (3 digits);
3. number of times the trainee has repeated the event (1 digit);
4. minimum score acceptable on the event (3 digits);

5. score achieved by the trainee on the event (3 digits);

6. date that criterion instrument was attempted (6 digits); and

7. indication that a comment is associated with the trainee's performance (1 digit).

For instance, a sample trainee record such as 057 547 2 078 085 020668 1, could be interpreted as follows:

> This is a record for trainee 057's performance on objective 547. The student took the criterion test two times. The minimum acceptable score on the criterion is 078; the teacher candidate has a score (on his second try) of 085. The evaluation took place on February 6, 1968, and a comment has been recorded relative to the trainee's performance.

If the trainee is required to repeat an event, the most up-to-date record will be available on the system; previous records will be stored and made available as needed. Itam seven, above, will consist of a "1" if the professor or trainee wishes to make a comment about this event. Otherwise it will be a "0". A list of these comments will be generated with their associated trainee and event numbers, and will be available as needed.

List of Activities Available for Achieving Each Event. This list will be available for each event. It will indicate what materials and activities may be used for achieving each objective. At the initial stage in the development of the entire program, the only means for achieving a particular event might be by taking a particular course. As the program expands and becomes truly individualized, a great number of alternatives may be available to the trainee. The advisor would assist the teacher candidate in his selection of the most appropriate alternative.

Estimated Time to Achieve Each Event. A critical element of all PERT networks is the estimate of time required to carry out each activity. There are usually three estimates: optimistic, pessimistic, and most likely. Initial estimates of these parameters will often be based on very little concrete data; however, after a number of teacher candidates pass through the new training program, time estimates of this type should become quite realistic and therefore should be included in the computerized management control system. Such information would be invaluable to the program administrator as well as the trainee and his advisor.

The five features described above characterize the real-time management system. More details will be indicated in the sections on input and output and systems requirements. We now turn to the essential characteristics of the batch-mode retrieval system.

### Batch-Mode Information Retrieval System

This system will serve primarily curriculum developers as well as educational researchers who will use these data to explore a variety of training hypotheses. It will essentially be a very large data base from which specific types of information may be retrieved in order to be summarized via standardized data analysis techniques. The basic information in this system will be of two types: (1) trainee background information; and (2) detailed trainee performance information.

Trainee Background Information. There will be a complete file on every trainee which includes all the information which is gathered as part of the selection procedure. This information is described in detail in another part of this document. In general, the file will include such information as scores, attitudes toward children, self-image, and openmindedness. It will also include information on the trainee's progress during the first two years of college, including such items as course performance, academic interests, and extra class interests.

Detailed Trainee Performance Information. This will be a complete file of all the teacher candidates' performances on all activities in the program. For activities which require the development of certain cognitive skills, the data may be in the form of results of a multiple choice test. If the activity relates to the learning and demonstrating of a certain technical skill in teaching, the data may represent the results of an observational checklist.

The purpose of these data will be twofold. The curriculum developer can retrieve that data which are relevant to the activities which he has created. The data will be invaluable in the formative evaluation and revision of the instructional materials and activities. The curriculum developer may wish to use the background information on the trainees to stratify his data in various ways; e.g., performance of junior college vs. home institution trainees. The second purpose of the data will be to investigate the relationships between background information and performance in order to make the training appropriate to various types of teacher candidates, to enhance the validity of the selection procedures for the program, to predict success in inservice activities, and to investigate alternative sequences for the instructional events. More details on this information retrieval system appears in the sections on input and output, and systems specifications.[1]

Although there were some differences, the Florida statement contains the essential requirements for the computer assistance needed to operate an intricate program and provide for its continuous regeneration through curriculum development. The provision for regeneration may be the most radical departure from previous teacher education programs, for the modular curriculum design permits replacement of curriculum elements as new ones are developed. Continuous assessment and redevelopment enables a rate and precision of curriculum improvement not possible without computerized management, just as the student-oriented aspect of management permits individualization and personalization of a sort not previously conceivable.

Florida State was concerned in its feasibility study to test the capability of its CAI system to monitor instruction and also sampled the reaction of students to the management process and the modular curriculum. The results were generally positive, leading toward more extensive testing of more complex groups of curricular elements and the ability of the management system to handle more complex demands.

The type of research conducted by Florida State and the subsequent research to test the feasibility of the specified management systems are essential to lay a basis of information on which development and implementation can proceed, for there has been almost no real-world experience with this type of management system in educational application. The specified systems appear eminently logical, but there are many important human considerations about which little is known. Systems which are flexible enough in industrial application may not be capable of adapting to human needs unless they are extensively modified--or they may work without essential modification.

Research in this area is urgent simply because the entire modular approach depends so absolutely on an effectively functioning management system. There is little point in speculating on the feasibility of the management systems without direct tests.

The ComField short statement of specifications makes clear the importance of the management aspect of the models:

### Specifications for the ComField Management Model

#### Content Specifications

Content Specification 1. The management model shall contain the support functions required to permit a

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[1] Florida State University, A Model for the Preparation of Elementary School Teachers (OE-58018) Washington D.C.: USOE, 1968, pp. 135-143.

ComField based instructional program to operate.

In order to operate, the ComField Instructional Model requires eight support functions: 1) management of the instructional process per se, that is, managing teaching-learning interactions; 2) development of the instructional systems for use in the program; 3) continuous evaluation of the effectiveness and appropriateness of the program as a whole; 4) continuous adaptation of the program in light of its systematic appraisal; 5) program execution; 6) personnel selection and training; 7) maintenance of equipment, supplies and facilities; and 8) maintenance of the information management system needed to permit all of the above to occur.

Content Specification 2. The management model shall contain a supporting function designed to provide cost/effectiveness data on all operations within a ComField based program, as well as the program as a whole.

Two demands are placed upon such a function:

1) an accounting of the resource requirements (full system costs) needed to operate and maintain ComField; and

2) the provision of cost statements reflective of product costs, effectiveness and impact.

Organizational Specification

Organizational Specification 1. The management model shall be organized in such a way that all functions within it will have as their aim the enhancement of instruction.

Too frequently the founding purposes of programs are lost sight of or are relegated to a position of secondary importance as time passes and the demands of operation take their toll. With so many functional components needed in its support a ComField based program is particularly susceptible to this threat; any of the support components could readily become "an agency unto itself." The management model...is the result of an effort to create an organizational operational framework that protects against this kind of danger. Conceptually it:

(a) places the instructional program squarely in the center of things,

(b) stresses the idea that information and directional influence flows both from the instructional component to the support units and vice versa, and

(c) provides for a continuous flow of information to the policy-adaptive component and hence to the program execution component.

While such a model cannot guarantee that all units within a ComField based program will act in concert, it does provide an operational framework which at least makes it possible.[1]

The critical factor in the success of such a system is the development of an appropriate interface between user and system (as recognized in the Florida Study) and the workability of the program elements themselves. The conception of the teacher and its breakdown into elements around which components are built has to be skillfully done and program elements have to be skillfully interrelated or the management systems cannot function properly.

The conceptions of the management systems seem sound; if the programs are well-conceived, the management capacity as outlined in the proposals is more than adequate to monitor development and implementation.

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[1] Northwest Regional Educational Laboratory, A Competency Based, Field Centered Systems Approach to Elementary Teacher Education (OE-58020) Washington D.C.: USOE, 1968, pp. 34-35.

# Chapter Five

## Interfaces Between the Public School System and the USOE Models for the Reshaping of Elementary Teacher Education

by

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Imagine that each of the 10 institutions had in fact graduated a first class of at least 100 students. Imagine that these graduates really looked like the ideal teacher envisioned by each institution. Also imagine that this group of approximately 1,000 teachers was scattered at random in the public schools of the region or perhaps of the nation. Should this miracle have occurred this last fall, our prediction is that the corps would make little or no difference in the ongoing life of the public school and that a large portion of these young people would barely last out their first year.

This gloomy prediction is in no way meant to undermine the products of Phases I and II by the ten institutions selected to build radical changes into teacher education. By and large, the plans are exciting, gutsy, and strong attacks on major problems in the filed. Several of them have the power really to produce a new breed of teachers and, I suspect, can and will do so during the next decade.

Our prediction, rather, focuses on the great discrepancy between the teacher products envisioned by any one of the models and the reality of the everyday teacher and the everyday teacher world. It is built upon long years of first-hand knowledge of the school's ability to resist major change. The built-in defenses of the public schools are formidable and well bastioned. This paper, therefore, will examine in some detail the gap between reality and the concept of the teacher in the models. It will also analyze the kinds of systems developed for linking programs with the field and for providing for multiple clientele developmental activity. Finally, it will consider ways in which the massive materials developed by the ten institutions might be used to close the gap between the schools and the ideal teacher of the models as well as to outline some further strategies for penetrating the defensive armor of the school.

## The Concept of the Teacher and the Schools

As indicated earlier, there is a great gulf between the concept of the teacher envisioned in the models and the reality of the school world. The teacher as applied behavioral scientist, the teacher as team leader and executive manager of a series of specialist, the teacher as change agent, as institution builder, and as scholar--all these ideas are liberally laced into the basic conceptions in the models. Different models push different conceptions; for example, the clinican and the applied behavioral scientist are particularly stressed by Michigan State and by Syracuse. The teacher as a member of clinical teams and as executive manager of a series of specialist gets heavy play in the Toledo model, and the teacher innovator and instruction-builder by Teachers College. Such live people, however, are both figuratively and literally, miles from the everyday classroom as it now exists even in most of the "best" schools and school systems in the nation. To be sure such ideas are part of the rhetoric of local leaders in more "advanced" communities. And in places this rhetoric is often confused with reality because the talk in some instances has been going on for so long that it is believed to be true despite massive evidence to the contrary.

Let me give some illustrations out of my experience in a large public school system noted throughout the nation its innovation and quality. Consider first, for example, the teacher as clinician. Although there has been a great deal of conversation in this school system about individualization and about diagnostic and prescriptive teaching, the major mode of teacher behavior (if we are to believe a series of observation samplings of the school system done throughout the last several years) is whole class instruction in a didactic manner using a single textbook. The major breakthrough in the direction of diagnostic and prescriptive teaching has been in a Title III Project which made an all-out attack on children identified as having difficulties in the early grades of school. The teams which worked with these children had a great deal more support in terms of resource personnel and instructional materials than does the ordinary teacher in this system. The results have been good. The director of the project indicates that the team was just beginning to get an initial hold on problems of diagnosis and on individual strengths and weaknesses during the third and last year of the enterprise. He also notes that the prescriptive skills of these highly competent and selected teams of teachers were weaker than their skills of diagnosis. That is, they began to have a grasp of students' learning style and general achievement level but had little command of what to do from then on. Now that the project is being phased out, eight teachers in four schools continue to try to do "their things" They are supported by a central office supervisor and a psychologist, one of whom has large responsibilities elsewhere in the system. These two leaders will attempt to keep the experimentation alive and to share with the rest of the school system such knowledge of process as was gleaned from this successful project. The point we are making is that even under the best of circumstances in the public schools only a few teachers seem to approach the clinician model considered desirable by the institution model builders. These few teachers, further, tend to get lost back in the system as soon as the major support is removed in the form of extra time, energy, material, and collegial encouragement. Thus time and the institution take their toll.

Consider secondly, the possibility of building clinical teams or career ladders for a series of specialists who work together, sometimes in parallel positions, sometimes in hierarchical organizational patterns. In this county, the stance of the local teachers education association toward differentiated staffing is a huge impediment. This teachers association, like most of its counterparts across the country, considers differentiated staffing a ruse or coverup for "merit pay," as anyone knows who has lived with a school system for any length of time. For some reason, the idea and practice are complete anathemas for the internal teacher power system. The old rallying cries die hard, and it will take a long while, if ever, before this set of boulders is removed from the path of moving toward specialization of teaching roles. We suspect that this opposition is not peculiar to this school system. And when one adds to this opposition the group of rigid "progressives" who continue to uphold the self-contained classroom as the only acceptable organizational model for elementary schools, the boulders become high cement walls.

In the third place, throughout all the teacher models ideas like "self-renewing," "self-corrective," "built-in feedback systems" are cogently argued and set forth as the central characteristics of a brave new world of teachers. To be sure, teachers in most systems today are constantly running to in-service courses of one sort or another--mostly given by colleges and universities. The reason that teachers run to these courses is that they are linked into the monetary reward system of most schools. That is to say, most schools pay scales are related directly to the number of courses and degrees that can be amassed. These credits plus longevity are the only really recognized criteria for movement ahead on a pay scale, unless the individuals involved take the administrative route up. Such certification requirements and the requirements for graduate degrees continue to be almost totally unrelated either to the professional needs of a teacher as he moves solidly into his career or to the needs of a given school or a school system. Thus the major reward system of most schools is totally unconnected with any kind of a self-renewing, self-corrective or feedback arrangements--either for the individual or for the institution of which he is a part.

I do not wish to continue with more samples of the discrepancy between the ideal teacher of the USOE models and the real school world. Nor do I wish to point a special finger at this school system. But I do wish to underline the fact that the introduction of the USOE specimen of teacher even into a favored school system is probably doomed as things now stand. And if the tension is so great within a "good" system, what about the large majority of schools across the country?

## Linkages with Clients in the Field

The builders of the USOE models were aware of the differences between theory and practice in the school world, particularly with regard to the realistic capacities and competencies of the everyday elementary teacher. In their thorough and massive fashion each model, in some way, attacks this problem and attempts to build a form of linkage with the schools in the hopes that the product will not be lost. In almost every instance, as is well documented both by the System Development Corporation's Report on Model Teacher Education Programs and by Bruce Joyce's Variations on a Systems Theme, deliberate arrangements are planned to involve schools and school systems in a collegial relationship with schools of education in the development of a new teacher education program. The final report of the System Development Corporation states:

> A radical change...has emerged from the models. Syracuse, through the vehicle of the prototype-cooperative group, has involved many local districts and other outside groups in the models planning and operation. Florida has instituted the concept of the "portal school," an innovative school in each cooperating district whose faculty will cooperate in the design and operation of training experiences. The Comfield and Toledo models were planned by a consortium of groups including colleges, school districts, state department of education, industry representatives, and professional and community groups. In all the models, a deliberate attempt has been made to improve communications among the groups responsible for preparing and using teachers and to develop patterns of mutual cooperation and benefit.[1]

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[1] System Development Corporation, Analytic Summaries of Specifications for Model Teacher Education Program (Washington D.C.: HEW, July 1969). Final Report, pp. 15-16.

The different models range from massive organizational structures such as those designed to link together almost every educational agency in Oregon to the seeming simplicity of developing the school as a center of inquiry in the Teachers College Model. Thus other schools of education, consortia, and school systems have a variety of patterns from which to choose as they transform the program models into real-world teacher education programs.

Reports of the feasibility testing of these elementary teacher education models (Phase II of the major project) also differ both in the attention given to this particular dimension of their models and in degree of caution and optimism elicited by feasibility testing. For example, the University of Wisconsin appears reasonably sure of the capacity of its consortium of ten schools to move ahead and serve as a link between its developing program and the public schools. The University of Georgia after surveying its constituents, felt that the coalition of local and state agencies, regents, research and development centers and regional labs could in fact be arranged. Indeed they report that the idea was enthusiastically endorsed by all hands. Similarly, the University of Massachusetts, after a large conference of schools of education, clusters of elementary schools, and other potential clients, got verbal acceptance for its major thrusts and verbal commitments for involvement in a new teacher education system.

Toledo feels that it is possible to create multi-unit differentiated-staff schools and has built some pilot schools in both city and suburbs. Toledo also laid on some rather extensive in-service work during the summer of 1970. These institutes were of two types:

(1) a leadership institute of college, university, and public school personnel and
(2) a teacher-supervisor institute for the teachers who would be operating and running the multi-unit differentiated-staff schools.

Toledo notes the necessity for conceptualization of an implementation model and thus suggests the possibility of unforseen difficulties in mounting a cross-sectional and interagency coalition.

Then there is Syracuse which, in both Phases I and II, put a considerable amount of energy into the planning and field testing of a multi-organizational semi-autonomous agency. This agency which links teacher education institutions, school districts, and instructional material development agencies as well as the sanctioning groups from state and local organizations, underwent considerable field testing. Syracuse reports that ten organizations were working together effectively. These were four public school districts, a regional educational laboratory, two Title III Centers, a group of educational futurists, an education industry and a university. They considered the availability of persons to take instructional leadership and administrative roles. They examined commitments from a variety of people and institutions. They questioned potential students about how well they accepted sweeping innovations in teacher education. They looked at the availability of the instructional materials and the state of the art in organizational capability. They end by saying that they believe they have "realistic, workable plans for accessing the readiness for an actual implementation of the Syracuse model, not only by the Syracuse University proto-cooperative, but in other settings as well."[1]

On the less optimistic side Michigan State University indicates that they were not able to pay as much attention to the linkage problem as they would like. At the same time they feel some confidence in this area since "experiences over the past few years in similar cooperative endeavors with other educational agencies have clarified many of the potential problem areas."[2]

The University of Florida feasibility studies identified

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1. Elementary Teacher Education Model, Phase II Feasibility; Journal of Research and Development in Education, Volume 3, Number 3, Spring 1970, Athens, Georgia, p. 84.
2. Ibid., p. 51.

several areas of difficulty which serve as constraints on implementation. In addition to those which are fiscal in nature, they note problems connected with re-organizing and ordering institutional changes from time to time to performance expectancies; problems relating to the introduction of systems approaches into an institution "structured along traditional departmental lines"; problems relating to certification; problems relating to differentiated staffing patterns; and problems relating to very complex managerial capabilities.

One does not know whether the University of Florida ran into real snags psychologically and politically as it tried to test its program or whether their major efforts went in another direction during the feasibility testing period. Whatever the case, the experience they describe and the caveats that they identify coincide with experiences we have encountered in attempts to change a large school system. My gut feeling is that none of the models has as yet put enough power and energy into the testing and planning of this section of the general design. Their thrusts and general directions ring all kinds of sympathetic bells in our value system. Realistically, however, most of the schemes, in our estimation, have confused the initial enthusiasm engendered by the possibility of new alliances with the potential operational capacity of the program. Often we have found that seemingly enthusiastic schools are more interested in pushing their own notions of conceptualization and practice than they are in learning new concepts and techniques. And we have discovered that understanding and verbal acceptance of an idea are one thing--the conversion of such acceptance into every-day operational practice and competency another. Let's hope this view of the change potential of the linkages in the models proves to be jaundiced. We will be interested in observing how the initial elan holds up over a long haul and whether, in fact, the schools linked into these varieties of consortium really acquire the professional expertise needed to design a new school and to induct prospective young people into a new profession.

The remaking of a school requires an enormous amount of support from the outside as well as charismatic leadership from within. Thus, though we have witnessed the generation of numbers of "innovative" schools during the past ten to twenty years, they have seemed not to have the internal fortitude and the resources to sustain themselves over time. Or if they manage, by some miracle, to stay alive after the first bright light of innovation has faded, they have very little effect upon other schools and school systems. In short, they seem not to have the capacity for regenerating themselves--for institutionalizing themselves.

These observations are not intended to be critical of the work in the models. Rather they reflect a healthy respect for the magnitude of the task. Building a new institution or revamping an old one is extraordinarily difficult and requires every known support for a long period of time. Indeed, the task may be impossible on any large scale in the immediate future, And so, those interested in remolding the school so it is more responsive to the needs of children and to the demands of society must consider every possible contingency and plug up every hole in plans. They must also be ready to produce alternative schemes should original planning prove not to meet the test of experience.

These conceptual models have already considered many components of the job of pulling together a series of independent institutions. Our experience suggests a few others which also need consideration. For example, we know that people and organizations tend to behave in an irrational fashion much of the time. Rational purposes and targets get subverted by the need of individuals and of institutions to take care of inner psychological and sociological insecurities. These include the need for recognition, for power, and for independence. This phenomenon operates even in the most task-oriented groups who are basically secure as individuals and as institutions. It is difficult to anticipate the form these psychological diversions will take at any given time. The phenomenon, however, is real. If the leadership groups are to remain on target during the life of the project and within the resulting changed institutions, consideration must be given to mechanisms for coping with the irrational component of human behavior.

Another sector which merits attention is the political dimension of the entire operation. Politics exist both within the schools to be created as a basic element of most of the consortiums, and within the total educational system and community to be served by the consortiums. As long as the consortiums do not touch the power bases within universities and school systems, they can probably continue to function indefinitely. The name of their game, however, is radical change--change which by its very nature will threaten existing power structures. The chances of the consortiums being able to withstand the political heat so generated are not very good, unless they are well prepared to deal with such situations. They will require internal organizational structures flexible enough to move quickly and adroitly; a top staff reasonably well insulated from political heat; real power in the form of control of budgets and personnel; and organized retreats when the kitchen gets too hot.

Perhaps the most serious criticism I have of the models is their coolness and rationality. Such characteristics are certainly essential to systematic planning and program operation, but seem bloodless to those of us who are concerned with the everyday operation of an institution. We are not suggesting abandonment of rationality, or systematic planning--only commenting that the basic stuff of the models is human--that humanity is also emotional, concrete, and disorganized. The models need to recognize this important part of man's being, both in planning and in operation. The University of Syracuse takes some steps in these directions. Most of the others assume a well ordered world peopled with well behaved men and institutions.

Another political dimension which merits more study and attention is the effect of educational change on the agents of change and on the total community. We have observed that people often get burnt out in enterprises of this nature and need to be sustained personally and professionally. And as educational change becomes visible and tangible communities often revolt. In the political life of many communities, there seems to be an ebb and flow toward acceptance of change. At times there is a political push to move quickly and decisively toward educational change. At other times, conservative elements move away from change with force and backbiting. Thus the pendulum swings from one pole to another and wipes out any constructive change that has gone on between swings. Net results is a great deal of noise and rhetoric but little, if any, lasting institutional change. These are political facts of life in any large school system and adequate provision for coping with them needs building into the models.

If change in the public schools is one of the central targets for the teacher education models, both colleges of education and school systems will require simultaneous re-engineering. Each institution has a life of its own and, generally speaking, will discard foreign bodies which are grafted on to the system. The teacher education models have in many instances been very forceful in the organization of massive management systems to take care of their own institutions but, have not planned to put the same ideas to work simultaneously in a school system. It is our belief that this is a requirement if massive institutional change is ever to become a reality. In other words in-service efforts must parallel pre-service efforts and must be of the same magnitude. It will not do simply to take care of the leadership groups within the schools which will be the bases for laboratory work and internships for teachers. They too can be totally ignored by the establishment, just as have the products of many good teacher education schools in the past.

## The Reorganization of Two Establishments

As we have seen in earlier sections of this paper the climate and life of the school and the school system are sufficiently well established and well patterned to reject the grafting on of new shoots from a reorganized teachers college or university. Involvement in the interlocking directorates and complex committee structures envisioned in the linkage systems of the USOE models is, we feel, not enough to serve as the change mechanism for the school. Simultaneous re-engineering of both establishments is a requirement if the new teachers are to stay alive within the system long enough to have a real effect upon the system itself. This is a very complex undertaking and will probably require the same amount of energy, or more, than that required to redesign the teacher education institution.

While there seems to us no question about the amount of time and energy that will be required on the part of the school system interested in preparing itself to receive the products of new teacher education institutions, some schools and school systems may have some advantages to help them along. School systems, at least the bigger ones throughout the country, are probably better bureaucracies than are colleges and universities. That is to say, they have had more experience in organizing and managing complex systems than have their counterparts in colleges and universities. By business and industrial standards, school systems are hardly models of corporate managerial capacity. Nor have they, any more than any other educational institution, focused energies and resources upon the major target (objective) of any school system, namely, enhancement of the learning of the young. On the other hand, over the years, they have been held more fiscally accountable than have the universities. They may have more understanding of the need for team work for getting a complex task done--and fewer artists and lone wolves. There is not the tradition of independent departments and faculties--each doing his own thing--nor the same amount of status and prestige enclaves to break down. In other words, we believe that the corporate model suggested by the systems approach toward a total enterprise and toward the educational "conglomerates" which these models foresee, is actually less foreign to the big school world than to the world of teachers colleges.

But the most important real advantage a school system would have which wishes to mount a massive retraining program for itself is the existence of these teacher education models. With very little adaptation the teacher education models could be used by up and coming school systems in many varied ways to upgrade themselves. Let us examine some of these uses.

In the first place a school system could look at the varied models and select a philosophical stance or mode or format to suit its own gestalt. For this purpose one could line up the models on several different continuums such as:

(1) from the relatively conservative to the relatively far-out--(the University of Georgia ----------> University of Syracuse or Teachers College, Columbia)
(2) from a tightly structured highly sequenced type of curriculum and organization to that which is more open and less carefully planned-- (University of Pittsburgh-------->University of Massachusetts)
(3) from the relatively simple to the highly complex in both organizational structure and conception--(University of Pittsburgh-------->Michigan State University)
(4) From curriculum and school climates weighted toward the cognitive to those which give more attention to the affective or emotional part of man's nature--(Michigan State------->Syracuse)

Thus at a conceptual or philosophical level schools could match their moods with the general style of the models most likly to meet with approval in that system. And there are various patterns which are possible in combinations of continuum. For instance, a school system might characterize itself as conservative, relatively loosely structured, highly complex in organization and ideas, and generally cognitive in expectations from the schools. Or it might be a far-out school, with a generally loose structure, rather simple in organization and conceptual pattern and wish to feature the affective rather than the cognitive. Or it could be far-out, highly sequenced in a cybernetic fashion, relatively complex in style, and more cognitive than affective in nature.

In like manner, the different "ideal teachers" of the models could be described and role played for a school system wishing to select a live product and value structure in keeping with its own. Such "ends" having been clarified, the school or school system could then choose curriculums and strategies designed to achieve these ends.

## Organizing Curricular Options

For within these models and across the models there are varieties of curriculums for all sorts of professionals within the system, as well as materials for high school students and community members. At a gross level of differentiation there seem to be three major types of consumers within a school community for these curriculums. The first is everyman. That is, there are exciting, modern programs which could and should interest every citizen. The second major consumer is the teacher who has direct relationships with children-who has immediate responsibility for setting the learning stage for students. The third group is institution builders and managers. One could lay out a conceptual map of these curricular consumers and uses as follows:

Curriculum III - Quality Assurance and Management

Curriculum II - Teachers
Planning Operation Evaluation

Strategies
Management

Curriculum I - Liberal Arts
For total professional staff
Whole community
Cross generational

Now it is possible to return to the teacher education models and line up what each can contribute to each section in this three-layered conceptualization. For example, both Syracuse and Michigan State University have well-developed general liberal or education sections. Both of them are conceptualized and organized in quite different ways from usual liberal arts curriculums. Michigan State in its humanities courses concentrates on the artist's perception of reality and method of communication, a way of teaching about the humanities which is certainly different from the usual series of courses most of us "took". In the natural sciences, there is a great deal of effort given toward examining the natural sciences as a way of thinking about reality and a process which affects all of current civilization.

Major themes in science, for instance are cosmology, mechanism, and evolution, and there are sections of the mathematics curriculum which focus on the historical development of man. These and the scholarly modes of knowledge form a bridge for the young prospective teacher between the liberal arts, the humanizing sector of general education, and the pedagogical use of knowledge, which becomes the major underpinning for professional education.

Both the liberal arts and professional use of knowledge sections could well be pursued by top-notch high school students; by any teacher interested in himself as a learner, as a human being, and wanting to experience at first hand the new modes of teaching and learning which are now technically possible, by supervisory and managerial types at both school system and at state department levels; and by the community at large--not only the PTA groups by citizens wishing to continue their own liberal arts education. The Michigan State curriculum designs and others that are also concerned with the man-making quality of humanities, social sciences and natural science, whet one's appetite not only to assist the present teaching profession to upgrade its own general education, but also to use these interesting new approaches as a unifying experience and inter-generational communication vehicle in the Margaret Mead sense. In other words, we see curriculum here which could be used across generations to attempt to begin the culture binding function so needed by our communities today.

As we focus in on the professional teacher layer of the curriculum model there are three distinct components which could well be filled up with a variety of curriculums--the stuff of an elaborate, thorough, and compelling series of in-service programs--again for all hands. By our lights these three components or categories are planning, operations, and evaluation. They are the three types of activity in which any teacher who call himself professional must engage. In short, the teacher must first have some idea about what he wants to do, then he must do it, and then he must find out if his activity worked so he can modify his plans the second time around.

The first or planning activity requires that the teacher integrate a great deal of knowledge about knowledge, about values, about societal needs and pressures, about the learner and learning, about teaching strategies and environments, and about instructional materials. Here the teachers "curriculum" is all the many facets of curriculum development in its generic sense, including the curriculum planning needed to design a year's work as well as tomorrow's lesson, and for several targets, i.e., for an individual, for a group, or for an institution. It is the base upon which effective instructional decisions are made and it presupposes knowledge of a variety of curricular missions and goals with their concomitant modes and moods. It further trains the ability to select and map out an organizational environment for learning for the student. Obviously large sections of each of the teacher education models are concerned with the enhancement of this component.

Component two in this sequence relates to the actual operation of the plan or interface between the curriculum and the children. Here is the test of whether the plans work or not; whether classroom management enhances the learning of youngsters or gets in its way; and whether the teacher is able to modulate his behavior in accordance with the plan he has set for himself and for the children. Quite naturally, this component requires the ability to act and later to see one's self and the setting in a relatively detached fashion. And again there is much of this "curriculum" in all models.

Component three is made up of that professional knowledge and competency which give a teacher feedback on both the process and product of the learning environment set up for youngsters. It requires command of available evaluative techniques both for students and for the teacher himself. Such evaluative techniques include not only the new performance referenced testing continuums and devices, but also feedback from recorded teacher-learner activity. Indeed I would also include here the ability to draw logical inferences from raw data and to organize such inferences and analysis into a cohesive whole.

It should not be too difficult to run through the teaching models and line up many "curriculums" for each of these categories. And they would offer a wealth of professional know-how to the present teacher-in-service. For example, a would-be staff development organizer could offer a wide variety of in-service options if he collected all the ways the different models treat behavioral objectives, or sensitivity training, or models of teaching and the use of video tape to organize and give feedback to a teacher. Thus there is a great deal of material for in-service teachers to study, understand, and make part of the professional repertoires.

Curriculum III as noted on page 5.14 is concerned with quality assurance and management within an institution. This managerial or institution building component receives considerable attention in Phase I of the Teacher Education Project and is further developed and intensified in the Phase II Feasibility Studies. There seem to be two major thrusts which have applicability to the middle or top management levels of schools and school systems. These are (1) the systems or cybernetic approach to management; and (2) understanding and control of curricular, instructional, and institutional change. These two elements are related but are not identical. The first attempts to adapt new managerial skills, developed by large and complex industrial establishments, to educational institutions. These skills grow out of computer and information processing technologies, as well as out of study of communications systems and organizational patterns. They include skills like PERT, complex managerial systems like McNamara's PPBS, and knowledge of communication and administrative patterns which enhance the probability of focusing resources on the primary tasks of the institution.

There are many such "lessons" for school managerial people in the Teacher Education models even though not formally organized into curriculums. And there is some highly pertinent managerial "work" which could be adapted and modified to suit a school system. For example, the Georgia model contains behavioral job descriptions for a series of differentiated elementary school staff, useful in almost any personnel department in a large school system. And several models have developed first generation PPB systems for their institutional complexes - developments which are certainly worthy of study by school systems attempting to adapt this conception to education. The institution building element is also, we feel, as essential for school leadership whether it be within the school or within central offices throughout the nation. This element deals with knowledge of the institution itself, its history, its relation to society, its present state of development, and with sociological and anthropological techniques and conceptions for observing an institution and for effecting change. This section is particularly well developed in the Teachers College model but is touched upon in others like Michigan State and Syracuse. It is of vital importance that leadership understand the institution in which it is operating and have tools for analysis of that institution. Without such understanding and competency leadership will remain as it has for years--capable of moving only with the politics of a situation rather than also with some professional control growing out of understanding of the nature of the institution itself.

In summary, there are three major curriculums which would be useful for schools and school systems to study in various fashions as they attempt to get ready to receive the products of the teacher education models. As indicated earlier, were I in charge of the massive in-service or staff development program outlined above, I would first winnow through all the models and put the various "curriculums" in the data storage and retrieval categories indicated above for ready reference, comparison, and study. That task of sorting and organizing, however, would be only the beginning of a program per se. The whole enterprise demands an operational plan including a well-defined goal, a series of institutional strategies, and feedback mechanisms which keep the whole undertaking on target. Present movements in the direction of quality assurance or accountability have this potential providing their true goal is enhancement of the learning of students and not simply conservation and efficiency of operation.

## Operating a Staff Development Program

### Goals and Target Audiences

For purposes of this essay, the major goal for massive staff development in schools or school systems is to produce a series of schools capable of capitalizing on the products of the Teacher Education models. Such a goal, obviously, will eventually mean a changed institution. It also means, according to our thinking, the design and development of a support system whose task is to enhance the school's capacity (1) to incorporate tested new ideas of one sort or another, and (2) to regenerate itself after it has acquired the first capacity.

To develop this idea further--our observations indicate that it has been possible historically to create individual schools which deviate from the uniformity now associated with the public schools and which could make use of some of the products of the projected teacher education institutions. But, as we have seen, such schools have been unable to regenerate themselves or to spread themselves into the great public school system as a whole. By and large, the flowering of innovative and experimental schools across the nation has been the result of hard working creative individuals who have managed by the force of personality alone to achieve an inquiring educational climate but not the strength to support themselves over the long haul. As a consequence these individuals and faculties often end up spent and disillusioned with little to show for an enormous amount of enthusiasm and work.

Furthermore, such innovative schools as currently exist across the nation do not, we believe, have the capacity or the support or the technology to sustain themselves. They need to be part of a system which organizes support for their efforts. Such support systems could be developed in the larger school systems by complete reorganization of general central office functions. Elsewhere the need could be served be regional centers containing staff development, curriculum, research, and instructional material experts. Some such centers have already been created to service small school districts in certain areas of the United States. For example, the State of Pennsylvania is moving in this direction.

Our argument is that a school as currently constituted cannot stand alone if it is to have any effect upon the body politic of the "school system." Further, if it is to have the strength and capacity to become what Robert Scheafer calls an inquiring school,[1] it must have massive support in the form of new knowledge, technologies, and resources. In other words, the creation of local autonomy, diversity, and recreative powers seems to depend upon the capacity of a larger group to organize itself as a support system so that expensive technologies and new strategies developed by R & D centers can be brought to local schools engineered and ready for school use. Paradoxically, the creation of the autonomy and diversity we seek is inexorable intertwined with the systematic reorganization of the "Establishment" so that _it_ can be more responsive to local needs and clearer about its areas of authority and responsibility. If these analyses have any validity, it is necessary to rebuild both the Establishment and the local school in order to use and not to crush the products of the projected new teacher education institutions.

The target "student bodies" for staff development, then, are both the staff of local schools and district or regional instructional support personnel...that is, administrators and specialists in research, subject matter, child development, evaluation, and organizational structure. To these two groups we add students, parents, and community members, all of whom have substantial investments in the schools. Their understanding of and participation in the reorganization of the system are logical, humane, and politically important extensions of more traditional "student bodies."

Essential Elements in the Dynamics of a System

Viable staff development programs have several essential components. Three have already been discussed, namely, goals or missions, curriculums or messages, learners or student bodies. In addition to these classic components, a system wishing to mount a large in-service program must have access to at least four important elements or forces within the system. These are time, leadership, instructional material and equipment, and the capacity for short and long term instructional planning, development, and evaluation, at both the school and the district and regional levels. Providing for any one of these elements is a necessary but not sufficient condition for the operation of an efficient staff development program. For example, the provision of time during the school year or during the summer without a corps of leaders to man the teaching posts is less than useless. Even the provision of time and instructional materials plus a cadre of teacher leaders, though they often can generate interesting local developments cannot produce the "critical mass" required to change a system. Required for that target are sophisticated operational plans and feedback systems. Plans need to be clear yet modifiable. They should have immediate and long-range sections and should set forth strategies, priorities, resources, alternative routes, and evaluative arrangements for each major area of attack.

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[1] Robert J. Schaefer, _The School as a Center of Inquiry_, (New York: Harper and Row, 1967)

Let me give an example of the types of planning for instructional change identified above. I have a hunch that major instructional change in a large institution, particularly an institution as properly conservative as a school or school system, needs to move forward on two different fronts. The first front I shall call a literacy front and the other a competency front. The first, or literacy front, requires understanding and awareness of a body of knowledge as is defined for levels one and two of the Bloom and Krathwohl taxonomies of cognitive and affective education objectives.[1]

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1. Benjamin S. Bloom, editor, Taxonomy of Educational Objectives, Handbook I: Cognitive Domain, (New York: David McKay Co., Inc.,1956). David R. Krathwohl, Benjamin S. Bloom and Bertram B. Masia, Taxonomy of Educational Objectives, Handbook II: Affective Domain (New York: David McKay Co., Inc. 1964).

The competency front requires a much higher level of learning on the part of the students. At least an application and a commitment level of performance should be the standard. Students expecting to reach these performance criteria should be "sold" enough emotionally on the objectives to work toward command of knowledge and techniques--command sufficient to demonstrate and teach them to others.

The major objective of the literacy front is to create a professional and political climate receptive to the kind of change which is imminent. Indeed, one hopes to create a professional and political hunger for the enterprise which these new technologies represent and an understanding of their potential. The major objective of the competency front is the creation of cadres of professionals completely versed in the new knowledge and technologies and capable of action as technicians, as teachers of teachers, and as teachers of teachers of teachers.

My plan insists that it is important to develop the staff training to achieve both types of performance standards and for all three target audience, i,e, --community and students, local school staffs, and instructional support personnel at district and regional levels.

The operational plan if outlined in diagramatic form looks like this:

Target--"Student Body A" (Direct Support Personnel)

| Types of Curriculum | Literacy Level | Competency Level |
|---|---|---|
| III Quality Assurance and Management | All | Small Leadership Cadre |
| II Professional Teacher | All | Small Leadership Cadre |
| I Education as a Liberal Art | All | Small Leadership Cadre |

Target--"Student Body B" (General Teaching Staff)

| Types of Curriculum | Literacy Level | Competency Level |
|---|---|---|
| III<br>Quality Assurance and Management | Small Leadership Cadre | |
| II<br>Professional Teacher | All | Small Leadership Cadre |
| I<br>Education as a Liberal Art | All | Small Leadership Cadre |

Target--"Student Body C" (Students, Parents, Community Leaders)

| Types of Curriculum | Literacy Level | Competency Level |
|---|---|---|
| III<br>Quality Assurance and Management | Small Leadership Cadre | |
| II<br>Professional Teacher | Small Leadership Cadre | |
| I<br>Education as a Liberal Art | All | Small Leadership Cadre |

In each instance, according to this plan, each leadership cadre has two functions. One is to train other leadership teams. The other is to develop and support the first "receiving" schools. Probably these functions will require two different sets of people throughout, though in some instances, it seems possible that one cadre could assume both tasks.

Note that these plans lay out three types of "curriculum," three "student bodies" and two performance levels of achievement. Goals have been stated earlier in this section. Before any of the plan becomes operational, however, all elements need further development and specificity. Performance levels need to be stated behaviorally and concretely. For example, the small leadership cadre in managerial techniques needs to be able to use PERT in everyday operations and to teach it to others. Or the leadership cadre from the general teaching staff should be able to use and demonstrate at least four different models of teaching, and to teach these models to colleagues using video-tape recorders and audio-tape. Alternative teaching strategies should be described and matched with different types of goals, curriculums and audiences. Evaluation tools need to be specified. For example, T.V. should be given a great deal of thought when it comes to communicating with Student Body "C" (Students, parents, and community leaders) at a literacy level.

But to move on with the illustrations. After greater precision and specificity is accomplished, the planning needs to pass through a feasibility screen. At this point the planners and operators should consider what the total plan requires in time, leadership, instructional materials and equipment. Also to be analyzed is the system's capacity for planning, coordinating, delivering and monitoring a complex program. Plans and targets need to be modified in terms of this assessment. All criteria must be met to some degree and if lacking will need to be provided or built before further operations are in order. Let us illustrate the use of the feasibility criteria by focusing on the big suburban school system described earlier. During the course of the last ten years or so, this school system has gradually managed to secure time for professional study and for staff development in general. Approximately one-fourth of the professional staff is on 12-month employment, the feature which permits in-service work at all levels during the summer months. The time, however, is masked by the requirment to staff a large summer school for children as well as to tend to the system's needs. An elaborate summer program includes a series of short courses, designed to appeal to a diversity of staff interests, and some intensive leadership workshops both in administration and instruction. The county is likewise fortunate in having at the central office level a corps of instructional experts equal to any in the country. This corps can offer leadership in curriculum development, in research and assessment, in teacher education, in program, planning, budgeting, in organization of instructional materials, etc. The system is in process of decentralizing its administrative organization into six districts or areas and is engaged in training a corps of district instructional leaders similar to those now at the central office. This staffing and training will not be complete for several years, but each district will begin with a corps of 25 - 40 specialists. The system also has access to an unusually large quantity of well selected instructional materials. Thus, on first inspection, this county has made in-roads on at least three of the major feasibility tests, namely, time, leadership, and resources. Schools, school systems, and/or regions not being able to meet these criteria will need to work toward their achievement before taking the steps outlined below.

An operational field test may show weaknesses in one or more of these critical areas in this county system, but at the moment, this system appears relatively fortunate in these particulars.

Lacking, however, is an instructional planning and development capability commensurate with the other facilities it enjoys. As a consequence, the system lacks operational focus and the capacity for putting to use such educational technologies as are generated here and elsewhere. It is possible to try almost anything of value in this county, but it is not possible to pull together the varieties of resources and leadership on a given target in a systematic fashion. Lacking also are major communication links between sections of the central office and between the central office, the new districts, and the local schools.

This school system then does not yet meet the feasibility criteria required (according to argument) to begin to build the capacity to receive the products of the proposed new teacher education institutions. The system, however, at least by inspection, is relatively close to this potential. If and when it acquires the commitment and resources necessary to build this capability within the system, it has a chance , we believe, to start field testing our staff development plan for literacy and for competence at several levels of the school system.

The system may find that it needs to train the leadership cadres at all levels first. Our hunch, however, is that all systems probably need to move together so there are reinforcing effects throughout the system. On the other hand, we suspect that it will be possible to create at first only a handful of schools at best and that these will need intensive training as operating teams, and consistent heavy support from both district and county levels of operation if they are to achieve maturity and the power of conception and nurture of new organisms.

And so to recap the general strategies and thrusts here, let us note that the building of the school or series of schools which can really utilize the strengths of the products of the teacher education institutions is inexorably linked with a reordering and reorganization of the total school system. The move forward can be on a broken front. This means the development of a few schools at first. At the same time the system builds district and county support for sustaining those schools, as well as creating the understanding and hunger for more schools equally responsive to community and children's needs.

Finally, the whole system will need to acquire the capacity to assess its progress toward the goal of building a series of schools capable of capitalizing on the products of the Teacher Education Models. If a school system is linked in a parallel fashion with a teacher's college also bent on reorganizing itself, perhaps one system could assess and monitor the other. Such an operation would give the feedback arrangements the advantage of objectivity and the possibility of building and using similar evaluative tools. Another possibility is the organization of a small laboratory outside both systems whose charge would be to monitor the progress of both systems.

Whatever the strategy, any system attempting this kind of bootstrap operation certainly needs power in the form of straight feedback on all its processes as well as in the form of control of budget and of personnel hiring and firing. With such supports and technologies built and organized on targets, the new teachers coming out of the model teacher institutions might survive long enough to make a real contribution to the further rebuilding of the school. At least it would be fun to try.

## Chapter Six

## The Student and the Program: The Problem of Reconciliation to the Client

Systematic training has enormous potential to provide for the individual differences of students. The potential derives from a number of sources:

1. Highly automated information and management systems make it possible to absorb and process great quantities of information about students and relate student characteristics to program options.
2. Vast varieties of program options can be generated and stored in modular form. In addition, options can be made available within modules.
3. Counseling systems, personal discovery components (see Syracuse's Self-Directed Component), and support systems can relate directly to the student.
4. Assessment and feedback procedures can virtually assure that program sequence and student progress are closely related so that students are not asked to learn either what they already know or what they are obviously unprepared for.

The question asked in this section of the report is "How do the program models capitalize on this potential and what can be done to increase the probability that the education provided will serve the teacher candidate on his own terms?" This question is important both because the program models are a source of ideas for the education community generally and because the feasibility of the models greatly depends on the match between program and candidate.

Examination of this issue is especially important because there is some controversy over the likely relationship between systematic, modular curriculums and their students, in this case the teacher candidates. The controversy arises from the apparent potential which modular curriculums have for adjustment to the student, especially with respect to the pacing of experiences, the assurance through pretesting that students will avoid experiences for which they lack readiness or for which they have no need because they have already-developed capability. The "obvious" advantages of modular curriculums for adjustment to the student lead some of us to sing their praises quite readily in this regard. This very capacity of modular curriculums (properly linked to management systems) to adjust to the student leads many reflective people to fear that systems design will produce a maze of "managed" program options - a series of faceless corridors through which students will be shuttled as impersonally as a data card in a sorter. It is feared that we have neither the technical knowledge to erect such a system on any but flimsy assumptions nor the moral certainty to take so many decisions on ourselves or to deprive the student (a future teacher at that!) of the experience of choosing and negotiating options.

To approach the issues concerning the relationship between the program models and their potential students we asked David Hunt, Professor of Applied Psychology at Ontario Institute for the Study of Education to analyze four of the models, selected because they appeared to embody a reasonably good range of program types.

Hunt was asked to analyze the four models in terms of two questions:

How do they relate the student to the program?
How could the reconciliation of student and program be improved to increase the feasibility of the models?

He dealt with these questions more or less simultaneously and the material which resulted is presented largely in his own words. The four models are referred to as A, B, C, and D so that Hunt would not have to be concerned about personal reactions to his analysis and to encourage the reader to see the problems as general to all attempts to apply systematic planning to program construction.

TO: Bruce Joyce

FROM: Dave Hunt

DATE: November 26, 1970

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Problem: To review four models of teacher training with specific reference to their feasibility with regard to taking account of individual differences among trainees.

Models: A, B, C, D.

Comments will be organized by first setting forth general issues on which the four models will be considered and then considering each model, in turn, in relation to the issues and any other comments which may seem relevant.

## I. Issues in the role of individual differences in teacher training programs.

The general individual difference issue will be considered in three specific issues: (A) how are individual differences dealt with in terms of general "entry" into the system, admission, screening, etc., (B) how are individual differences in component skills dealt with, and (C) how are individual differences in aptitude (differential susceptibility to various instructional approaches) dealt with?

### Issue A.: Individual differences among applicants for teacher training programs.

When the issue of screening or selecting applicants for a training program is considered, two errors are frequently made. The industrial model of predicting to a criterion is usually employed with the screening information considered the predictor and general teaching effectiveness after training as the criterion. In other words, programs often try to pick applicants who resemble the desired final products as closely as possible. Such a simple view ignores the role of training entirely since its aim is simply to identify as precisely as possible these persons already possessing those characteristics of "successful teachers" rather than assess "trainability" or potential. The programs analyzed tended to fall into this trap. For example, Model D, Vol. I, p. 57, lines 40-41, we read:

> "A predictive function to assess the question--What estimate can be given at this point for a student's probable success as a teacher?"

Such use of the industrial predictor-criterion model not only removes the burden of responsibility from training, but also makes it less likely that any change in the "criterion" i.e. what teachers do, will occur. Put another way, this procedure is a not-too-subtle means of maintaining the status quo. The second problem comes in its use of a general criterion. Some models distinguish between different roles, e.g. generalists, specialists, and it is important in doing so to incorporate this distinction into the screening base. Oddly enough, in a different section of Model D (II,pp. 6-34 on input components), considerable awareness is shown regarding differential criteria, but selection is seen as ensuring the success of training by restricting the variability of applicants to those easiest to train to a generalized conception of the teacher.

There is an important distinction between selecting for potential, or trainability, and that of selecting for specifically differentiated tasks or criteria. Programs should specify their stance on both issues and provide for both in selection procedures.

The range of variation of the programs is illustrated by considering program B's requiring all candidates attain a B+ score on the Strong Vocational Interest Blank (Model B, II, p. 10) while Model C states:

> "Careful examination of the appropriateness of this present filtering action will be necessary in order to insure that talented and capable persons are not

> prevented from entering into teaching because of an arbitrary and possibly irrelevant University admissions requirement." (C, p.35).

Model D (II, p.5) also tends to allow for flexibility while Model A (p. 126 ff) is more fixed.

Model programs should be encouraged to accept a wider variety of applicants with identifiable characteristics so that more information relative to trainability can be obtained. Planners of teacher training are in a bind: they feel inadequate because their applicants and their graduates are inferior on ability tests (cited in most reports as evidence of need for a change), yet to attempt to attract only candidates who are higher on ability (without attending to other characteristics) may be to prevent the likelihood of changing the kind of teacher who is trained (i.e. maybe brighter people who simply score higher on SCAT are less "trainable"). In any case, each program should specify more clearly the rationale for selection. In all cases, except "C", it seemed that the underlying rationale was to pick "winners" initially so that you will be more likely to wind up with winners. This procedure may be defensible (or at least necessary) in a short-term training program like the 13-week Peace Corps program, but it is not defensible in a four-year program. Somebody must begin to consider selection on the basis of potential, or trainability, rather than simply proximity to the final criterion at application time.

In sum, the criterion should be specified (general-specialist), and the rationale for selecting trainees both in relation to this criterion and to the nature of the training program should be made explicit. Maybe it is impossible to spell out the latter at the present state of knowledge: if so, model programs should be encouraged to experiment by admitting a diversity of applicants to acquire a base of such information and gradually proceed (through the use of their very flexible management systems) to develop better trainer-program relationships.

Let me describe some issues by using four hypothetical approaches to selection:

First approach: Selection is based on how closely the applicant approaches the general criterion, i.e. the "successful" teacher. Like the "simple industrial model" in which job applicants are selected on the basis of their similarity to "successful" persons on the job, this first approach does not consider criterion analysis in that the "successful" teacher is characterized generally (with no attention to differential effectiveness) and empirically (no attention is paid to why the criterion group of teachers respond to the Strong Vocational Interest Blank as they did). This approach disregards entirely the possible effects of training. This approach may be necessary in short-term training programs such as the Peach Corps where practicality and urgency required that selection aim to identify "winners". However, the more stringently the simple industrial model is applied in selection and the more effectively it identifies "winners", the less necessity there is for training. Thus, the procedure implicitly abrogates the responsibility for training.

Second approach: In this derivation from the "complex industrial model", the criterion is first analyzed in terms of components, then selection procedures are devised to index the applicant's present position on components, and selection is based on the applicant's similarity to the component profile desired in the criterion, i.e. "successful" teacher. This second approach may use a differential criterion since component indexing opens the way for operationally defining different patterns of "effectiveness", but this is only a hypothetical possibility which may not be realized. Although more precise in defining the criterion, this approach is identical with the first in its stance toward training. It takes the "Industrial model" for predicting criterion, and therefore ignores the effects of training. Pre-training component profiles, of course, are potentially useful for planning differential training, but this approach, because of its commitment to the industrial mentality is unlikely to take such advantage of component information. It is simply a version of "picking the winners" which incorporates components in prediction.

Third approach: This approach collects information similar to that in the second approach, but treats it differently. Here, the question of "trainability" is left open. Thus, applicants varying considerably on pre-training components are accepted to determine whether certain profile patterns respond better to training for a particular criterion pattern than others. For example, suppose that we consider how to use two hypothetical characteristics which we will call "interpersonal strength" and "interpersonal sensitivity." Thus, although there would be little disagreement here on accepting "strong-sensitive" applicants and rejecting "weak-insensitive" applicants, it is an open question about which of the two remaining groups -- "strong-insensitive" and "weak-sensitive" applicants can be more effectively trained. Rather than select within this group in terms of similarity to a general criterion, this approach would take a sample of each to learn more about modifiability and trainability.

Fourth approach: This approach is similar to the third approach, but it incorporates aptitude or accessibility to differential training intervention. Thus, in this approach, some applicants who were low in all components, e.g. "weak-insensitives" might be accepted on the basis that, if we know enough about the most appropriate form of intervention, they may be trained to a much higher component pattern. Obviously, this approach is very experimental, and such a program could not be faced by stringent requirements of producing a large proportion of successful teachers immediately. The rationale of this approach reminds us of what we told Peace Corps five years ago: "You can never learn anything about selection procedures beyond picking winners unless you experiment with accepting a more diverse group of applicants to note their reaction to training." This fourth approach is also reminiscent of the Upward Bound Guidelines which advocated "picking losers" (i.e. poor school records but with some potential) in order to determine more about how they might be given educational experiences which permit manifestation of the potential. The fourth approach has both component analysis and "accessibility" analysis.

In practical, non-experimental terms, the first two approaches are more likely when many applicants are available while the last two are more likely to be employed when almost all applicants must be accepted for training.

Finally, the approaches not only increase in "risk" as they are described, but also in terms of the responsibility of training, and perhaps most important, for their implications for changing the role of the teacher. Approaches 1 and 2 guarantee the proliferation of the status quo. They will produce teachers very much like our present possible version of what a teacher can be. Approaches 3 and 4 offer the possibility of some change through the combination of differential criteria and acceptance of at least some applicants not within our present conception of the teacher. Thus some students will stretch us and our training programs if we use the third and fourth approaches.

## Issue B.: Individual differences in skill components.

One assumed benefit from a performance-based task analysis is that it permits more individualized training which is not in the "lock-step" tradition, because trainees can proceed through training sequences according to their actual growth. Surprisingly, some models (B) do not appear to take advantage of such "skill-branching". This model defines skills, but specific minimum criteria are not defined nor is any branching procedure developed. The specification of specific minimum criteria is very important and often overlooked, for as Model C points out:

> "...in any one area a person could spend a lifetime and not be able to meet all the possible criteria which could be written as more information and skills become known and developed." (Model C, pp. 16-17).

Since the usefulness of individual difference measures on this issue depends entirely on the adequacy of the system of representing the skill components and their sequence or form of organization (how adequately has the task been analyzed), it is instructive to note how models vary in this degree. D tends to be most explicit in the sequencing (cf. D, II, pp. 35-77 for example); A is probably next; C has a curious stance on the issue:

> "Trainees may choose the sequence in which they wish to meet performance criteria and may reorder this sequence at any time. This may be done within the constraints stated in item '1' plus the obvious implications of 'hierarchical skills' principle of learning, i.e. pre-requisites are necessary for the learning of certain kinds of knowledge and skills." (Model C, page 39)

If this principal is so "obvious," it is curious that the writers of the components sections, especially the human relations component of that model, did not take it into account when they built their sequences of modules. Model C, in part, appears to be straddling the issue: either we know a logical sequence in an area or we do not. Whether a sequence can be developed in any area or not should be made explicit. Once explicit, then the issue of whether we require the student to follow the logical sequence or inform him of it so that he can opt away from it according to his judgment becomes a distinct and separate issue.

The Model programs also need to rationalize the basis for the sequence within each component. For example, Model B is simply an endless list of specifications which have little utility as they stand. In the B model, the only acknowledgement of branching is the "remedial clinic" (V. 26). Apparently, writers of some models do not understand the full potential of cybernetics or systems analysis. If the hierarchy is unknown, then this becomes something which should be studied, but there is no value in acting as if we know, but for other reasons we are leaving the sequence up to the wisdom of the trainee, and there is no value, either, in forcing a sequence but not letting the trainee in on that and letting him opt the sequence he thinks will help him.

A's use of initial assessment of entry skills (p. 131) is valuable, as is the C's profile (p. 15) for various specialties. Specification of the size of unit on which the trainee can branch is important, also. Programs seem to vary considerably on this dimension: some permitting branching of an entire component; others branching on modules. It is conceivable that a "super-applicant" might not need any training. Could the program identify him and if so, what would they do with him? Immediate certification? Further training (as on C, p. 15). Programs should address themselves to these issues.

The method of indexing skill within a component is not unimportant. For example, while B (p. V-17) proposes to index pre- and post-test performance measures by paper-and-pencil tests, check lists, and performance scales, one wonders how this will work, and whether the model could not profitably borrow from some of the others. The relatively naive form of measurement in the D model contrasts sharply with the multi-method measurement proposed in the Model D Educational Psychology module (D, II, pp. 35-77). It should be noted here that there will be a strong tendency toward easily objectifiable methods of measurement as the programs move toward more automated forms of recording, and the tendency to measure according to computer feasibility rather than for precision should be checked. Check - lists and pencil-and-paper measures will be tempting, but complex assessment tasks are more likely to be accurate especially for teaching behaviors. The models need much more work on the technology of measurement. For example, although it did well in educational psychology, in general the D assessment procedures (D, I - 109-134) were completely incomprehensible to me.

Issue C.: Individual differences in aptitude, or differential susceptibility to various instructional approaches.

Here, the issue is crystal clear: how precisely are the individual differences in trainees coordinated with variations in instructional approaches, and how is such information treated in the system? Let us briefly consider the models on this dimension. Model B shows no awareness of this issue. A is metatheoretically aware of the necessity for instructional alternatives (p. 51), lists them in terms of experience codes (p. 55) which are woven into the specific forms of training so that one is apprised of what variety of forms a particular component ia available. However, little awareness is shown of which modes might be appropriate for which trainees. Put another way, A makes branching available, but no system for how to apply it to individual trainees. The PERT network (A, pp. 140-141) might be used for this purpose, but would need to be extended. Research should and can be conducted into ways of using program management for this.

Model C indicates much verbal awareness of the problem (e.g. pp. 38-39), but one has serious questions about the degree to which it would be feasible in such a complex, trainee-centered program to use aptitude information in any very meaningful way. Although the trainee will be scheduled for 15-minute guidance sessions every two weeks (p. 50), and the guidance function described on p. 38 sounds excellent, one must stop and reflect on the feasibility when based on the following kind of statement:

> "7. Once vocational goals are established, the sub-system based on relevant attitude and achievement data will determine the optimal strategy for trainee to meet performance criteria related to above goals." (C, p. 39).

One must admire the boldness and apparent sophistication of the C view on ATI. However, one must also look with question at statements like the above in relation to presently available knowledge and technology as well as (and this is probably even more telling) its consonance with a trainee-centered program. One cannot run a program in which matching is based on the computer and also trainees are given free choice. Model C ducks the most important issue of how to coordinate these two promising but apparently contradictory ways of dealing with the problem.

Perhaps, the most realistic and adequate treatment comes in the "personal orientation sub-element" proposed by D (II - 16ff.). However, as indicated earlier there is such disparity between this section and that in Section I of the same model (esp. p. 57) that it is a little hard to tell which horse they are riding.

In sum, a program should indicate the variation in instructional modes, explicate what trainee characteristics are collected, how these trainee characteristics coordinate with instructional variations, and perhaps most importantly, how such coordinated information will be used in the system. None of this seems unreasonable or beyond existing technology, so long as the results are closely observed and program modification results.

## II. How does a system-directed approach work with trainee-centered trainees?

Overlaying and underlying all of these performance-based, system-oriented models ia a rationale which is also a value orientation. The issue raises many questions: How can one train for humanistic effects in a mechanical fashion? (Model C tries to deal with this problem in the concept of human relations behavior, but I found this analysis very shallow and logically unconvincing.) Is it reasonable to expect the acquisition of interpersonal skills in this mechanical framework?

Perhaps more important is the question of differential response, or providing differential forms of intervention to trainees whose value orientations are inimical to the whole program mode. I am amazed at the degree of resistance which has emerged among our graduate students just in the past two years to any kind of treatment which they construe as de-humanizing, mechanizing, or stereotyping; and this resistance includes especially taking account of individual characteristics which they (or some of them) see as categorizing and classifying which will prevent being seen as persons.

I am not certain that a model such as any one of the present four can adapt to such a value orientation and still maintain any semblance of a performance-based, multiple-intervention training program. It is a very tough issue.

The other side of this coin is how does a program like Model C, for example, deal with a trainee who needs much structure - who really wants to know what the program is so he can get through. There is no point in going through the exercise of providing alternatives if many trainees simply try to follow the normative choices of their friends. The program, in short, should attend to the role of normative pressure from peers. These two counter-pressures, generated on one hand by trainees who resist classification even for individualization and on the other hand by trainees who want their programs prescribed for them, cannot be dealt with entirely by instructional alternatives within the program since they have to do with "matching" or "mismatching" between trainee and overall ethos or ideology of the program.

## Recommendations for Specific Models

### Model A

1. Although they are quite careful to qualify the way they will use admissions tests (II-105ff), the model would best regard some of them as aptitude characteristics and specify how treatment will be related to the aptitudes, rather than simply trying to admit candidates easy to train.

2. The experience codes (I-55) which are later applied to various specific components should be explicated as they would actually be used in relation to specific component elements. This will permit:

3. Clarification of the possible relation of variety in experience codes interacting with individual differences among trainees.

### Model B

It is hard to be constructive. This proposal is so general that one hardly knows where to begin.

1. Some of admission procedures (II-10) seem indefensible as mentioned earlier and should be revised.

2. As in the case of Model A, many of the criteria might better serve as aptitude variables and be related to training procedures. Most of the models could be improved by this procedure.

3. The rationale which separates requirements by assistant, teacher, and specialist is difficult to understand. As far as can be seen, there are no instances where the assistant was not low and specialist high. It is also not at all clear how these specifications would be implemented, especially in relation to the affective taxonomy. If a person's values are to be changed, how precisely can one specify the level of changes? Those models which use the taxonomy need to face the issues in this area.

Model C

1. This model should clarify those "obvious hierarchies" of learning referred to earlier (p. 39, #2). Specifically with regard to the flow chart on p. 45, how is the "trainee assisted in determining educational goals" and how are "relevant performance criteria selected?"

2. The model is a metatheoretical tour de force in its general rationale but ignores many really obvious practical problems. However, at one point they observe that one could spend a lifetime on one component and then proceed to propose training which might take just that long. Going through all of the performance criteria in human relations alone would certainly require several years.

3. The material in the appendices is stimulating, but not in any order or hierarchy. It is not clear whether they eschew sequence entirely to maintain leverage for individuality or simply don't have a sequence. This needs to be clarified. Sequencing without a rationale leads to disorder, no matter how the sequence is numbered.

4. It should be made clear what portions of the program are open to student options and what portions are fixed (cf. earlier point re size of units fixed or optional). The model is full of rhetoric about optional activities but no provision is made for distinguising the optional from the required and the profiles of performance imply many required performances.

5. They should distinguish between ATI's which are based on evidence so that they can implement them and those which are simply being observed for research. Because they throw in so many possibilities their whole ATI looses credibility.

6. My general reaction is that this model is wildly unrealistic. To expect trainees to opt without being influenced by some norm (what happens if everyone wants to read about the task instead of training directly on the task?) is to ignore the characteristics of most trainees. What they will want to know is, "What is the usual program?" As mentioned above, the number and type of performance criteria is also highly unrealistic, especially since there is no indication that many criteria (e.g. in human relations) bear any relation to effective teaching. To put it mildly, students will have much trouble opting to seek goals which are poorly rationalized.

7. Another example of the unrealistic quality is on p. 51, line 12 when they propose that "Samples of teaching performance of the three groups would be rated on a global basis by sociologists, psychologists, mental health workers, curriculum experts, etc." Throughout the model simpler, more implementable procedures are needed.

In short, this model has the possibility of being useful... it needs a simpler, clearer plan based less on rhetoric and more on achievable goals.

8. A few of the items in the model are so outlandish that they deserve underlining although the point has been made. I will restrain myself to one:
P. 211, C: "The trainee will...practice using Gestalt therapy on another student." I have seen post doctoral clinical students who have had a lot of trouble learning Gestalt Therapy. Who are they kidding? The same trainees who need help with their self-concept are suddenly Gestalt therapists! The program undermines its credibility continually by this kind of thing.

## Model D

1. My general reaction is that this model has some portions which are quite promising, with another few months to iron out disparities, might be a very valuable model. In present form, the disparity between the position papers in Volume I and the specifications in Volumes II and III make suggestions difficult except to recommend that they specify more clearly what they plan to do. Much of Volume I is unnecessary, and some of it detracts from clarity of later portions. The section on cognitive and affective taxonomies (pp. 78-82) is unnecessary. The chapter on assessment (I, 109-134) is too preoccupied with methodology for its own sake. The function of assessment within the model should be clarified, however, and this has not been accomplished.

2. The disparity alluded to earlier between the cybernetic system chapter (I, pp. 47-77) and the chapter on input (II, pp. 5-34) needs to be ironed out. Although the former gives some indication of individualization (I, p. 59, lines 9ff.), the view of individualization seems to refer to skill level rather than to aptitude, which is a serious lack, but remediable.

3. The sophistication in deriving a training model from a systems model, and supporting it with computer-based control is impressive. It would be even more impressive, if, for example in III, 22-25, some attention were given to trainee aptitudes beyond simply stating "unique to his needs." At the least, they should collect aptitude information so that indications of differential effectiveness could be obtained for later application within the model.

## Summary

Classifying the four models according to the trainee/program relationships described on pages 1-3, I find:

Approach #1. "Simple industrial model" (Pick applicants who are most similar in their pattern of skill components to "successful" teachers).

Model B (II, p. 10)

Approach #2. "Complex industrial model" (Pick applicants who are most similar in their pattern of skill components to "successful" teachers).

Model D (if assume that statement in II, 6-34 takes precedence over I, 57). D also included the applicant in the selection process more explicitly than do other models.

Model A (p. 126ff.) with description on p. 130 implying Approach #3.

Approach #3. Select on components, but leave questions of trainability open by selecting a diversity of skill component patterns.

Model C (p. 35) seems to lean toward this approach, but it is not explicated.

Approach #4. Select a diversity of candidates to learn more about trainability of applicants with differing skill component patterns as well as differing accessibility patterns.

This approach is so experimental that none of the programs propose it. They will increase their feasibility to the extent that they approximate this approach, however, and use the flexibility in their management systems to modify their programs as the results become available.

## Living in an Assessment Environment

Although systematic planning of teacher education programs is promising and the modular designs in particular offer a high level of individualization, a very serious and fascinating problem which needs to be faced while the programs are being developed is one which inheres in any extensive modular curriculum plan. The problem is that of arranging the program so that the student does not live in an "assessment environment" - a kind of hell of pre-tests, post-tests, and continuous and abrasive feedback about his performance and the way that his performance relates to his capabilities. The problem is a fairly obvious one, but it is a fairly serious one, and its solution is essential if the programs are to become feasible. We believe that it is possible to solve the problem, that it is not a problem which will solve itself and unless the systems development of the program is thoughtfully done, the very advantages of the program can exacerbate the problem to the point where the program environments could be really horrendous. The problem develops quite simply and logically. Imagine:

1. A teacher education program of about two thousand modules all organized under a management system which provides for the diagnosis of student development and needs and the prescription of the appropriate modules along certain streams of development. In addition, the system encourages the student to develop his own instructional alternatives to those already provided and, in fact, to participate in the development of objectives in some domains and the generation of experiences for achieving those objectives.

2. Each of the modules consists of a pre-test, a statement of objectives, a system for providing remedial experiences prior to the module if they are needed, a series of instructional alternatives, a post-test, provision for recycling, and for further post-tests and provision for exit from the module, for contact either with a guidance system or to another module.

   In order to humanize this, we

3. Arrange that the student will have frequent appointments with a guidance counselor or with the "self-development component" and all relevant guidance information will be shared openly with him to help him make his own decisions and so that he will know why certain kinds of decisions are being made for him. This means that if a student progressed optimally through a program, there would be at least five thousand assessments. In the

average four-year college program there are about six hundred days during which a student is instructed, (about 150 days a year) and, in a 2500 unit modular curriculum, he would be assessed approximately four times each day. In that same average day, he might receive the information from the previous day's test, again four in number, and he would be working through modules preparing for tomorrow's four tests so that altogether he could be living in twelve test environments in one day. In fact, he surely would on the average if these programs are carried out as they are specified.

We hasten to warn those who would quickly dismiss systems models and turn the above statistics in rhetoric against systems planning. In the present college curriculum, a student may go for fifteen weeks and then take four tests all in one day or within one week and those four single assessments determine his success for an entire semester and that is an absurdity and a cruelty as well. It is far better to have too much assessment and have a person know where he stands than to have him wander along through idyllic weeks and a pleasant college campus and then get the ax one bright day unexpectedly.

To make the "systems" models feasible, we feel that it is imperative that solutions be developed to this problem. Perhaps sampling techniques could be used so that a student would not be assessed with respect to each module but at regular intervals with the progress in between those intervals estimated on a probabilistic basis. This does not guarantee the efficiency of each module for each student to anything like the extent that the regular assessment system does, but human beings are not so erratic that it might not be quite serviceable.

Also as Hunt has pointed out, some students prefer to give themselves feedback, others to have it from their peers, and yet others to have it from persons who are in authority or in a position of an expert. This might be capitalized on to develop a differential feedback model in which students would receive feedback from various modes at various times with respect to particular kinds of learning outcomes. With greater variety of sources of feedback and more modes of feedback, the environment might be made more gentle and less abrasive.

Another potential direction for solution is to make large portions of the assessment process rather informal with only some of the parts being formal and related to the information retrieval system on the student. For example, much of the evaluation in seminars might be informal peer evaluation through the discussion of issues and problems or students who are trying a new teaching strategy could give each other feedback about how well they were doing and provide some coaching for one another with the tougher, more unyielding checkpoints being spaced at fairly good intervals.

Yet another potential direction lies in the gradual accrual of knowledge about the effectiveness of modules. For example, once it has been established that a certain proportion of the modules in a program have a particular efficiency ratio, let us suppose that they are 95 per cent efficient with 95 per cent of the students, then regular assessment of every student does not become necessary. We can assume, on a probabilistic basis, that those modules will be effective and use sampling devices to find out for which students they are not effective and which ones of them lose their effectiveness over time.

A combination of sampling procedures, intermingling of formal and informal feedback, utilization of a variety of modes of feedback and the testing of modules could result in patterns quite different from those toward which all the models appear to be heading at this present writing.

## Chapter Seven

# Behaviorism and Conservatism: The View of the Teacher in Four of the Systems Models of Elementary Teacher Education

by

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What are the implicitly held value stances and particular educational conceptions found within the teacher education models and what problems are latent in those stances and conceptions? I believe that on the whole the merits of the proposals may outweigh their negative attributes; however, there are certain fundamental problems that have to be examined if the effectiveness of the models is not to be merely verbal.

The behavioristic view of teaching found in these models carries with it certain assumptions regarding varying aspects of education--the teacher, the teaching process, the mind, the student and the curriculum. These assumptions appear to embody latent elements of conservatism which play upon each dimension in different ways. The conservative elements include restrictions of scope such as with curriculum; a ceiling on the provisions for change in both the educational environment and the larger societal context; limitations on the opportunity for creativity in both learning and teaching and finally, a commitment to a philosophy of external control and regulation of human behavior. Some of the manifestations of these assumptions present political and practical difficulties; others are problems of logic associated with a behavioristic view of teacher training and teaching. The question that must be asked as we examine these assumptions is which elements are inherent in the behavioristic view of teaching and which simply reflect the limitations of our own visions, imagination, technology and choice? Only then can we fairly and intelligently face the decision of commitment.

There are basic differences here between the four models. One is quite conservative and offers little hope of change since its methodology posits a fairly rigid structure. Another envisions teachers who specialize in one of four academic disciplines and who will be trained to function in a multi-unit school, but with so little attention paid to the very real political problems of instituting its reforms, thus, it holds little hope of change. One has a forward-looking conception and a structure which makes implementation seem less than impossible.

## Purpose

The tone of the analysis may seem negative at times. This has been a result of a deliberate choice to subject the models to serious criticism. The models, with their competency-based and behavioral orientation, offer what is essentially a new paradigm for educational practice and research. Such a break with the past must be examined quite carefully. There has not been a tradition in the literature in teacher education of honest, searching criticism of proposals, much to the detriment of the field. This decided lack of a critical perspective has led to periods of either stagnation or rapid but surface change so similar to the "bandwagon" phenomenon that has had such a long career in other areas of educational thought and practice. Also, the models are disturbing intellectually in some crucial ways. These deficiencies will be pointed out, not merely to engage in nihilistic activity but because of a commitement to the opening of a perspective on the need for continuing dialogue among concerned educators of a variety of persuasions. This is best thought of in dialectical terms. A field becomes vital when its members present well thought-out proposals, are open to rebuttal and engage in argumentation and counter-rebuttal, and hence progress to a more sophisticated understanding of its complex problems. Thus, while my tone is critical, it is in the spirit of developing a dialogue over complex issues.

One task of this analysis, then, is essentially to raise significant questions concerning the Models of Elementary Teacher Education. Hopefully, the next step of the necessary "debate" will be continued by the model proponents. The issue is not whether the competency-based proposals will produce a relatively better skilled and more articulate teacher than is now usually being trained. There is really little doubt that they will at least produce more technically competent teachers. The more important questions are "Competent to do what?" "Competent by whose standards?" And above all, "Can the models be made better if certain basic issues are dealt with more cogently?"

Another task is to examine the realities behind the goals as stated in the Models of Elementary Teacher Education. For it is a quality of educational slogans (here not meant in a pejorative sense, but in a descriptive and analytic way) that they do not imply their particulars. That is, they are broad categories under which one can place many programmatic suggestions, even to the extent where the same slogan can refer to two or more disparate educational ends or programs. The current watchword of "relevance" is a case in point. It serves as an umbrella for many types of educational concerns and ideologies, from the romantic anarchism of Paul Goodman to the social and economic reconstructionism of the spokesman of the ghetto. Their programs are often contradictory, yet they do fall under the all-embracing call for a more relevant education.[1]

The Models of Elementary Teacher Education use terms reminiscent, in this sense, of relevance. Each proposes a program which will prepare teachers who, to paraphrase, "will be able to adapt to the changing environment, will be effective and skillful in dealing with school situations involving teaching and learning, and who will act as potential leaders in the continual rejuvenation of society." Yet behind these worthwhile goals and slogans lie different views of the teacher, of the best modes of preparing these teachers, and implicit value stances which can serve to enhance or detract from the attainment of the goal. We shall have to go behind such initial statements and explicit program intentions in order to get a more accurate perspective on the actual substance of the models and to examine possible implications of their differences.

## A Conservative View of the Teacher

As mentioned in Chapter 4, all of the model-builders agreed to base their program on the behavioristic view of teaching and to use a systems approach in designing them. The conception of the teacher found in the models is often closely related to the systems design methodology used in determining the characteristics of the teacher they wish to produce.

Although a behavioristic view of teaching and systems design methodology are not synonymous, they are highly compatible, perhaps even interdependent. The concept of systems design used by most educators seems to have originated in industry's concern for efficiency in developing a standard product. It is geared to similarity of output and provides a means of quality-control. By specifying the product one wants and then working backwards to analyze the inputs and processes which make up that predetermined product, efficient production and quality-control can be maintained. This is the logic of industrial-production and the logic applied to the processes of education in the application of systems design. It is thought that such a model (some might wish to call it a factory model) is useful in establishing means for minimum satisfactory performance of teachers and for bringing about minimum levels of competency in students.

## The Teacher as Determined by Job Analysis

Following the industrial-production analogy and logic, Georgia attempted to develop a behavioral model of the teacher using job analysis.[1] In their naive use of the approach, Georgia's proponents seem unaware of the fact that there is a significant history in the curriculum field of the use of job or activity analysis. The historical criticisms of the method are quite pertinent today for examining significant problems in their conceptions of the role of the teacher.

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[1] Michael W. Apple, "Relevance--Slogan and Meanings," The Educational Forum, in press.

Georgia states that its task is to prepare a program "in relation to the job the teacher is required to perform in the classroom. By defining what the job actually is, the competencies necessary to perform specific tasks may be adequately determined."[2] They then go on to state that "it would logically follow that the content of a teacher education program should be based on the teaching act itself."[3] Discounting the fact that the logic used here is essentially tautological, there are a number of issues that need to be raised.

A major difficulty is a problem which they do not squarely face--that is, what constitutes a "good teacher." Is one to assume that their working definition is that a "good teacher" is that individual who can cope with the activities which currently go on in schools? If so, this is rather conservative. The knowledgeable criticisms of current educational practices are too potent to be ignored. While the method of activity or job analysis gives us data on what is, it can tell us nothing about what should be. When it is relied on heavily, it is more suited to a static society than one which is obviously changing as rapidly as our own. Goergia attempts to deal with the problems inherent in job analysis by including in its model plan goals for the schools as stated by experienced educators, philosophers and others. However, an analysis of the stated activities of teachers and the role which they actually play in the Georgia Model shows convincingly that "what is" has, in fact, been used to legitimate and give extreme weight to "what should be." We shall examine these activities in detail later in the analysis.

Part of the difficulty inherent in their failure to deal adequately with the important issue of what constitutes a "good teacher" is the significant amount of argumentation in the field of teacher education as to what teaching effectiveness actually entails. There is little difficulty in locating, say, a good plumber whose activities can be analyzed, but even an in-depth examination of the literature reveals no such agreement on the characteristics of teacher quality. What it does reveal, however, is that there is agreement that much of what occurs in schools is less than adequate and much teaching activity must be changed from what is found today to a more knowledgeable ideal. That there are other quite conservative elements in the models, and in Georgia, especially, can be shown.

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[1] University of Georgia, Georgia Educational Model Specifications for the Preparation of Elementary Teachers (OE 58019) Washington, D.C.: USOE, 1968. p. I-5.

[2] University of Georgia, Ibid., p. III-1.

[3] University of Georgia, Ibid., my stress.

The process-product rationality fosters an orientation toward efficiency in teaching based on a standardized product. By itself, the efficiency rationality presents few problems. What is disturbing is its apparent propensity for generalizing itself into nearly all major aspects of the educative environment. Thus, while such criteria are not necessarily antithetical to diversity, there is apparently a strong tendency, simply by following the logical structure of the system itself, for efficiency rationales to dominate. The result is that those elements which can be best produced and reproduced, which can be identified and are easily quantifiable, will tend to be given more consideration. Also, orderliness and very rational (often suprarational) procedures are apt to be given currency over less manifestly orderly and somewhat more ambiguous procedures, thus acting to place pressure for clear cut directives and answers where the ambiguity and complexity need much further investigation. It generates pressure to be able to give clearly stated cause and effect relationships in a quasi-scientific fashion when, in fact, such relationships are logically unsound. These will be further pointed to as we continue to pose certain issues for consideration by the builders of the teacher education models.

## The Teacher as Clinician

The conception of the teacher developed by Syracuse, Massachusetts, and Michigan State is somewhat different from that of Georgia, perhaps due to a different point of origin. They perceive the teacher as one who can become, through training, increasingly aware of the elements involved in making decisions, who consciously tests and revises hypotheses, and who approaches the classroom in a fairly sophisticated fashion. Michigan State, for instance, views its teacher as someone who is rather similar to an action researcher, with, however, some strongly worded qualifications differentiating between a teacher with a clinical behavior style, as they call it, and an action research style.[1]

> The key rallying cry within the action research movement was "Research is easy, and it's fun! Anyone can do it, and those who do discover more enjoyment in teaching." Most practitioners who engaged in easy,

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[1] Michigan State University, Behavioral Science Elementary Teacher Education Program (OE 58024) Washington, D.C.: USOE, 1968. p. III-14.

> fun projects obtained a misleading view of research and scientific inquiry as a game having a few simple rules that could be played by anyone with a little intelligence and initiative. In contrast, experiences of the training programs described in this report are designed to help trainees view behavioral science not as a simple game played by amateurs for their self-amusement but as a complex activity conducted by skilled professionals for the benefit of mankind.

The model continues in its attempt to distinguish between clinical behavior style and action research.

> . . .Action research experience tended to obscure the importance of doubt and uncertainty and error and changing conceptual structures; science as the construction and reconstruction of abstract conceptual structures linked to empirically observable phenomena was hidden from view. In contrast, the training programs outlined in this report attempt to reveal in honest but manageable form the complexity and diversity of conceptual structures and methods of inquiry in behavioral science. Within a clinical behavior style of teaching, various modes of inquiry and conceptual structures will be used to look at an instructional problem from alternative points of view, subject to empirical testing of actions derived from those points of view and restructuring of the problem in accord with observed consequences.[1]

The clinical behavior style has three components which, as we shall see, are quite similar to those proposed by Massachusetts. The "reflecting phase" involves describing and analyzing a problem within one or more theoretical frameworks[2] and produces a diagnosis.

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[1] This may be a rather limited conception of relevant conceptual structures. See, for example, the discussion of divergent frameworks of valuing in Dwayne Huebner, "Curricular Language and Classroom Meaning," Language and Meaning, James B. Macdonald and Robert R. Leeper, editors, (Washington, D.C.: ASCD, 1966), and the well written analysis of the many "modes of knowing" we have in Philip Phenix, Realms of Meaning, (New York: McGraw-Hill, 1964). These important pieces offer an interesting alternative way of critiquing the perspective on teaching in the models.

[2] This use of different theoretical frameworks to illuminate the problem and see it from another perspective is a very important point in its favor.

Second is the "proposing phase" which involves constructing alternative solutions to the problem and determining the proper "treatment" or "prescription." Obviously, the third component of the clinical behavior cycle is the "doing phase" which "involves treating the client and observing what happens subsequent to treatment. Seeking evidence on the consequences of treatment, and then viewing the treated client in his situation as a new problem to be investigated by reapplication of the cycle, is the activity which allows the practitioner to 'learn from experience'."

The similarity of the language used here to that of the medical profession is important. The possible consequence of it will be dealt with in detail shortly, as will those consequences associated with a strong professional and clinical view of teaching.

In nearly all of the other models chosen for analysis, the orientation is also toward viewing the teacher as an expert clinician who consciously (and self-consciously) diagnoses situations and can act appropriately. Perhaps the best statement of this perspective on the teacher is made in the Massachusetts endeavor. Their object is to bring the teacher's processes of decision making to increased awareness so that he may consider alternative procedures based on the wide selection of professional skills, strategies, and data that he possesses. The "thinking and behaving" is divided into three stages which are shown in this schematic presentation reproduced from the model.[1]

Stage I: Problem Definition

A. Consideration of alternative definitions of the problem. (Divergent thinking)

B. Tentative commitment to one definition of the problem. (Convergent thinking)

Stage II: Consideration of Alternative Solutions

A. Development of as many possible alternative solutions to the problem as possible. (Divergent thinking)

B. It may be noted that the decision to include a thought as a possible alternative solution or reject it as irrelevant to the problem is convergent thinking.

C. If it is difficult to discover alternatives, a redefinition of the problem and a return to Stage I may be necessary. (Feedback.)

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[1] University of Massachusetts, Model Elementary Teacher Education Program (OE 58022) Washington, D.C: USOE, 1968. p. 202.

Stage III: Decision for Action

A. Consideration of the possible implications for action of each alternative. (Divergent thinking)

B. A tentative commitment is made to a course of action. (Convergent thinking)

C. If none of the alternatives seem suitable or the decision proves inadequate, return to Stage III. A. to examine other alternatives, or Stage II to develop new alternatives or Stage I to reconceptualize the problem. (Feedback)

There are two latent problems with this conceptualization of the teacher as conscious decision-maker that are not limited to this particular statement by Massachusetts. While it is crucial to recognize the importance of producing a teacher who is in fact conscious of the types of decisions he must make and who is given concrete skills in making these decisions, it is also imperative to point to the density of the reality which this teacher must face in schools. It may be that the immediacy and complexity of dealing with twenty-five (or thirty or twenty) human beings and with an established institution with the usual bureaucratic conditions will not allow for the process of conscious articulation of decisions and alternative structures _during_ activity.[1] What may be happening here, in effect, is the equipping of teachers with both a vocabulary and ideology of conscious decision-making and the skills to do this in _limited_ representations of educational reality, but with no rationality which can deal with the _political_ problems of actually changing school structures so that these conscious properties can be useful. This is a major problem with the models and one which will be pointed to in greater depth in our discussion of the possibility of ideological conflict between competing interest groups.

What should be noted before temporarily leaving this topic is that historically one of the primary causes of disenchantment and feelings of normlessness and anomie is the conflict engendered when a personal ideology does not match a political reality. It is quite possible that the models of teacher education must develop a much stronger critical perspective and newer vision of the school as an institution not limited to a building divided into boxes, no doubt better equipped boxes, but boxes nevertheless. A changing view of the teacher requires concomitant attention to the structure of the institution _and more concrete and sophisticated_ analyses of how these institutions either totally, or partially are to be restructured. To divorce one's view of teaching from one's view of the milieu in which this teaching is to be carried on, or to link one's new perspective on teaching to a possibly outmoded and, perhaps, alien institutional structure is to deal but superficially with what we all know is a supremely complex problem. There needs to be a closer examination of the impact by environmental and architectural systems upon the interpersonal ones, not "merely" the articulation of alternative organizational plans on which the models concentrate much of their attention.

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[1] Marvin Taylor, "Educational Goals and Teacher Effectiveness," _Contemporary Thought on Teaching_, Ronald T. Hyman, editor, (Englewood Cliffs, N.J.: Prentice Hall, 1971), p. 227.

It should be obvious by now that the achievement of any educational goal is a result not "merely" of the teacher's behavior, but also myriad other factors in the environment and how these are perceived, manipulate, and are manipulated by the individual actors _in situ_. Attempting to determine effective teaching in isolation as _the_ variable neglects the density of the situation.[1]

A second, and equally significant problem, especially in urban areas, can be seen. With the envisioned development of a corps of teacher/clinicians organized around a sense of professional expertise, there will no doubt be a commitment by these teachers to a professional ideology similar to that found in medicine. Part of this ideology will be based on a belief that the members possess what sociologists of knowledge like to call "expert knowledge." The holders of this expert knowledge form a definite community, an in-group, so to speak, which often resents incursion into its defined territory by non-members. This is quite the case in medicine as it is in other areas of knowledge and professional competence such as astronomy and historical biology where the Velikovsky case caused quite a stir.[1] The development of such an ideology may lead to confrontations with some of the people who are served by the public schools.

Over the past few years, a hard-fought battle has been waged in urban areas of the country for community involvement in, even control of, the schools. Often teachers must work closely in these areas with community leaders, sometimes treading carefully and, often, filling what may be only an advisory capacity in the actual making of many decisions which affect what goes on in the schools. The conflict between teachers who hold an ideology which disallows non-professional encroachment on what are deemed to be professional matters and parents whose growing ideological position concerns the necessity of literally controlling their own destiny, with the schools as a prime medium of this control, could be bitter. One of the most difficult tasks that the teacher educators who are developing the models must face (and one which very few of them, in fact, have given more than perfunctory attention to) is the possibility of this type of conflict over the control of schools.[1]

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[1] Michael Mulkay, "Some Aspects of Cultural Growth in the Natural Sciences," _Social Research_, XXXV (Spring, 1969).

A basic reason for the lack of insight in the models into the more than likely discord between "clinicians" and citizen groups is their failure to follow the logic of systems thought to its completion. One of the primary prerequisites of systems analytic procedure and systems design is to conceptualize all of the relevant sub-systems which interact with the functional whole. To neglect this is to lose much of the potency of systems thought. A significant area, which is not dealt with or is treated in only a very cursory fashion by the models, is that of conceiving the teacher as a member of a political system, that is, involved in the distribution and possible redistribution of power to make decisions. In fact, this question is begged.

## A Conservative View of Teaching: Changing the Learner's Behavior

Like the design methodology, the behavioristic view of teaching to which all the models subscribed, contains conservative elements which need to be examined and recognized. To quote the Michigan State Model, "In general teaching is defined as human behavior which results in a change in human [learner] behavior.[2] A close examination of this view of teaching leads to some basic difficulties, especially those concerned with the connection between teaching and learning.

Now, obviously "teaching is a change in learner behavior" is a slogan under which is subsumed certain goals. These are probably something like the following: 1) We must focus on students not on subjects, or as it is often put, we teach students not subject matter. 2) Look, for teaching to be better, we really have to focus more on competencies and actual effectiveness. And in order to focus on how effective we are, we must specify the actual behaviors that students will engage in so that we can refine our teaching and be better next time.

We should remember that ideally this is an attempt to humanize teaching by making the teacher more effective and more conscious of the behaviors that he can employ to bring about the best results. Yet, while no one would quarrel with the ideal, one can question its conceptual simplicity.

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[1] It should be mentioned that there is an attempt to place some degree of emphasis upon understanding inner-city cultural patterns in the more astute models. Yet to intellectually comprehend cultural patterns is not the same as coping with the potential political conflict.

[2] Michigan State University, op. cite., p. I-21.

In essence, the relationship can be indicated by a rather simple equation.[1]

$$\text{Behavior}_{\text{Pupils}} = f(\text{Behavior})_{\text{Teacher}}$$

This serves to indicate that the behavior of the pupil is a function of the behavior of the teacher.

The linkage of teaching with learning is perhaps helpful on some (but not all) practical grounds, but is a bit too surface if one is to base a lasting view of the teacher upon it. Scheffler's discussion of teaching illuminates certain problems. There are, in essence, two uses of teaching viewed as activity. These are logically separate and involve the distinction between a success sense and an intentional sense of teaching.[2]

By its very nature teaching is in some way an act of influence. In its usual usage, it aims at establishing or intends certain goals[3] and aims at designing environments which can best achieve them. The intentional nature of teaching lies in this attempt to create humane environments for reaching these goals. If these goals are, in fact, reached, then the teaching has obviously been successful. Yet to link the two permanently would be less than accurate.

Let us take as an example an attempt (intention) to teach a student to draw. Using all the resources at his disposal, the teacher is basically and continually unsuccessful even though he is strikingly creative in his attempts. Would we, then, say that the teacher has not been teaching? As one more example, we might examine the teacher teaching by being a model for the propensity to behave in accordance with democratic principles. Since there are usually very few opportunities for the student in school to demonstrate this in other than rather trite and unimportant ways, are we to assume that it is unimportant to teach them because success cannot really be demonstrated? This temporal dimension of the linkage between teaching and learning is crucial and will be raised again.

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[1] William Rabinowitz and Robert M.W. Travers, "Problems of Defining and Assessing Teacher Effectiveness," Contemporary Thought on Teaching, Ronald T. Hyman, editor (Englewood Cliffs, New Jersey: Prentice Hall, 1971), p. 217.

[2] Israel Scheffler, The Language of Education (Springfield, Ill.: Charles C. Thomas, 1960), pp. 41-44.

[3] That this is not accepted by all educators should be noted. See, for example, Dwayne Heubner, "Curriculum as a Field of Study," Precedents and Promise in the Curriculum Field, Helen F. Robinson, editor (New York: Teachers College Press, 1966).

There are other logical difficulties with a definition of teaching like that implied in the models (i.e., teaching is bringing about a change in behavior). I am wary of pushing the more "academic" problems too far (after all, our job is educating teachers in the best possible way we can). However, the view of teaching embodied in the models is founded strongly upon this definition, and what may be more important to gaining an intellectual sophistication so necessary in teacher education, it points to the continued neglect by teacher educators of analytic perspectives. Teaching viewed as changing of behavior of students does not enable distinctions to be made concerning this very moral nature of the teaching act itself. It ignores the important differences between, say, teaching and training or teaching and indoctrination. I may brain-wash an individual and definitely change his behavior; however, most would agree, I am certain, that this could not be labeled as teaching. It also runs the quite realistic risk of substituting a technological slogan for what should be a reasoned moral choice.

Linked to this is the fact that learning here is also seen as a change in behavior. A very real problem that must be dealt with much more cogently than has been the case in the models is what is to count as behavior. It is a word that is remarkably ambiguous. For a group who are attempting to develop a more rational and sophisticated (if not scientific) view of the act of teaching, it is surprising that the sophistication does not extend to this problem, except to substitute further ambiguity such as using the word "action" instead. To define learning as a change in behavior (and this reflects heavily on the view of teaching posited by the models) does not differentiate learning from other processes which result in changes in behavior. It should be obvious that not all changes in behavior are learned and that to view all learning as resulting in changes in behavior merely begs the question as to the constitutive rules or criteria for defining behavior itself. This leads to a circularity of thought that is in no way helpful to solving the very practical problems of getting evidence of one's teaching success.

While it is not always logically defensible, a case can be made by the model developers for linking teaching with learning on political grounds. This may be rather important. By defining teaching as "behavior which results in changes in learner behavior," then the teacher can be held (should be held) accountable for the learning of his students. This eliminates many of the socio-psychological explanations that have been used to account for the failure of schools in the past in urban areas in particular and centers responsibility once more squarely upon the schools themselves. The notion of teacher accountability is revolutionary in that teaching must succeed if it is to be considered teaching at all. Learners' behaviors must be changed to show that teaching has been successful. The political dimensions of this area of the models are intriguing. Whose idea of what constitutes effective teaching will they use to legitimate their activity? Perhaps the last question can be more clearly stated--To whom and to what criteria will the teacher be accountable? The lack of political (broadly conceived) insight and rationality in the models detracts from their possible potency here.

## A Control-Oriented Classroom Social Climate

Another question that must be asked is whether the behavioristic view of teaching leads to a "teacher-dominated" social climate? The Michigan State Model, for instance, has a somewhat conservative view of teacher functions. It is rather control oriented in its outlook with an emphasis upon the teacher as the central figure who dominates a great deal of classroom activity. The patterns of influence are unidimensional. That is, if one were to mentally construct a matrix of strength of influence, it would emanate from teacher to student with little or no mutuality. In itself this is merely realistic since enough research has been done to give us information that this is how most classrooms operate. When coupled with the other more control-oriented perspectives and aspects of many elements of the various models, however, it makes one pause.[1] For instance, one might conjecture on the significance of the following element of teaching behavior which considers the "environmental dimensions" of the classroom. A function of the teacher is "deciding on classroom rules necessary for maintaining an efficient and orderly classroom--permission and prohibitions, rules and regulations."[2] That this differs in its basic orientation to teaching from, say, that posited by the English Infant School movement which is beginning to have an impact in the United States needs to be stated. The models view classroom activity as essentially centered about the teacher who determines objectives and teaches according to the primary criterion of efficiency in learning.

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[1] Perhaps the best example of the overemphasis on the behaviorist-as-controller orientation (and here it must be noted that the two need not necessarily go together) is found in one of the models not being treated in this analysis. However, it is useful as an example of the extremes to which this may be taken. In the Com-Field Model, behavioral expectations are to be noted for parent-teacher conferences. The teacher is to conceive of what he wants as his outcomes of the conferences in behavioral terms. This can lead to a manipulative set toward interpersonal relations and may bring about an assumption that openness is of less importance than, say, turning the parent's views into "proper channels," so to speak. Cf., Joel L. Burdin and Kaliopee Lanzillotti, A Readers Guide to the Comprehensive Models for Preparing Elementary Teachers (Washington, D.C.: ERIC Clearinghouse on Teacher Education, 1969), p. 59.

[2] University of Michigan, op. cit., p. III-56.

## Behavioral Objectives: A Conservative Approach to Curriculum

Coupled with the behavioral change view of teaching is the emphasis on behavioral objectives. The two go hand in hand, as it were. Strengths and weaknesses in one affect the relative strengths and weaknesses in the other.

Let me reiterate here that, while the weaknesses of the behavioral perspective on teaching have been and will be stressed, the possible positive features of the use of the behavioral paradigms must be given their due as a major aspect of teacher education. They can serve to focus on the student; they can enable the development of a relatively more skillful teacher in some areas; they are first steps in the articulation of a more comprehensive perspective on the teaching act; and, of great importance, the models attempt to use behaviorism to establish a sense of teacher responsibility and accountability which goes beyond any previous usage. Yet, with proponents time and again, it should be noted that much of the emphasis on behavioral modes may stem from the fact that this is where funds are to be found and where support lies. As in the physical sciences, research and development often follows the lead of government support.[1]

The models almost totally neglect the vital intellectual controversy over the use of behavioral objectives in education. They give the impression that there is no significant body of scholarship critiquing the behavioral orientation.[2]

The argument for behavioral objectives has been thoroughly articulated in the Michigan State Model. Let us examine this closely.

> Basing BSTEP on precisely-written, performance-based behavioral objectives clearly has the support of leading thinkers in education today. Ojemann emphasizes

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[1] Cf., Warren O. Hagstrom, The Scientific Community, (New York: Basic Books, 1965).

[2] Whether this is due to the fact that funding might not have been forthcoming is interesting and serves to illuminate the final point of the previous paragraph.

the importance of overt performance as the base for evaluation, saying, "The only way one can learn whether a child has mastered a skill, a bit of knowledge, or a feeling pattern is by observing his behavior in specified situations." The need for specificity has been cited by Bloom, who says, "For the educational technologists and evaluators, the clearer the specifications are in terms of both content and behaviors, the better."

The use of such behavioral objectives has a number of strengths. Most important, behavioral objectives communicate clearly. Criterion measures let the student know at once the behavior he is expected to exhibit in the course of study and specify for the instructor the precise behavior he must develop in his students. Once instruction begins, the criterion measures become even more useful in providing feedback to the student concerning his progress in the component and in providing diagnostic data for the instructor's use in providing special help for those who need it.

Second, the use of behavioral objectives enhances the evaluation of the program itself. Once the intended learnings are identified, collection of objective data about the system becomes easy. Decisions concerning the effectiveness of instructional techniques and materials are made not on the basis of subjective judgments, but by comparing results against the specific criterion outcomes specified in the objectives. Hence, program modification and evaluation is enhanced.

Third, explicitly stated behavioral objectives guard against alteration in the program by various pressures and whims. As Bloom stated:

> "If the purposes and specifications for education are not explicit, then it is possible for them to be altered by social pressures, by fads and fashions, and by new schemes and devices which may come and go with momentary shifts on the educational scene. Implicit purposes are difficult to defend, and the seeming vacuum in purpose invites attack and substitution of explicit purposes by a constant stream of pressure and pressure groups." (Benjamin S. Bloom, "Some Theoretical Issues Relating to Educational Evolution." Educational Evaluation: New Roles, New Means, National Society for the Study of Education Yearbook. 1969. page 29.)

> While continual evaluation and modification in the program is certainly desirable, such modifications must be based on specific data rather than on whim. Behavioral objectives, by their specificity, insure that such will be the case.
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> Fourth, the use of performance criteria and behavioral objectives makes it possible to determine clearly whether or not the student meets the minimum level of performance deemed necessary for beginning teachers. . .
>
> Finally, by examining behavioral objectives, persons outside the university community can tell exactly what it is that the graduated student can do. Currently, student competency is defined by a letter grade or number grade received in a course. Such measurement is haphazard, since the grade provides no insights concerning what the student knows, or what he can do, or how well he can perform. . . . Behavioral objectives, on the other hand, aid communication because they cite in detail the performance to be expected and the level of competence of a graduate from such a program.[1]

While this is essentially an argument for behavioral objectives on a university level in a competency-based program, much of the argument is also used to legitimate the behavioral orientation on the elementary school level. The fundamentally deterministic foundation is evident here. But what is really disturbing is the rather conservative political outlook most apparent in the third listed "strength" of behavioral objectives--that behavioral objectives help guard against pressures from social groups. It is definitely the case that safeguards must be built to ease conflict with society's manifold groups. However, also behind the statement seems to be presupposition that such conflict is necessarily bad and is not just as often (and perhaps more so today) a positive force for needed educational change. It would be naive and less than accurate, though,to strongly correlate a behavioral orientation to teaching with political conservatism. There are other elements that correlate with a conservative educational viewpoint, however.

Looking behind many of the comments on behavioral competencies, one finds such statements as, "If intent to teach is presumed to be an essential feature of the act of teaching, then competence in teaching is primarily effective transmission of knowledge."[2] The critical question to be asked here is, "How is this effectiveness to be ascertained?" Knowledge, here, is used in such an open way that it includes more than what is usually grouped under the cognitive label.

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[1] Michigan State University, Feasibility Study: Behavioral Science Teacher Education Program, Washington, D.C.: USOE, 1969, pp. 91-92f.

[2] Ibid., p. 139. (Underscoring of intent theirs.)

As educators, not only are we concerned with "knowledge" and skills, for that matter, and so forth, we are also vitally interested in less immediate concerns such as states of appreciation and self-awareness, which occur over longer periods of time and are not necessarily evident in changes in behavior at the time a student is in school. An appreciation of diverse forms of music or positive attitudes toward one's own or other races are examples. By limiting ourselves to behaviors which can be seen here and now or over a fairly limited amount of time, we run the risk of severely curtailing what may be just as important activities in the long run.

It is quite true that aimlessness is lessened by such a procedure and that we can often obtain evidence of the success or failure of our teaching thus, but the evidence (behavior) that learning has taken place may not be manifest until a substantial period of time after the occurrence of the learning itself. Even when the learning is manifest, it may come in a totally dissimilar form than what was anticipated.[1] In actuality this should be looked upon as a boon, not a problem. If a principle or, what may be more important, a disposition toward, say, intellectual openmindedness is truly made one's own, it is generalized to different situations. What is more, the meaning that we as observers may give to it may be totally different from that given to it by the actor himself.[2]

The program developers were apparently aware of the problem, but, rather than attempting to develop patterns of evaluation which can deal with extremely subtle types of growth, the programs themselves seem to be written with ease of evaluation in mind. This is evident in the statement quoted earlier arguing for behavioral objectives. With the emphasis upon concrete observation of change and probable evaluation through the use of instruments, the focus of the programs tends to be upon those elements for which the teacher can be most easily prepared--areas of clear, easily-measured objectives and well-known, efficient means. That is, those goals about which we have a tendency to become marginal. This is a serious problem of conceptions of teacher effectiveness gauged through behavior change in the learner. The problem does not disappear by recognizing it and not expanding conceptions of the teacher to include the less obvious goals and means.

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[1] Donald Amstine, Philosophy of Education: Learning and Schooling, (New York: Harper and Row, 1967), p. 17.

[2] Cf., The distinction between act and action meaning in Abraham Kaplan, The Conduct of Inquiry, (San Francisco: Chandler Publishing Company, 1964), pp. 358-363.

Given the total number of people in a classroom, how is one to determine when an individual teacher has satisfied performance criteria? The most likely result, even with the differentiated staffing plans used in the models, will be that some sort of the usual test or standard group criteria will be used. In only a small way does this add significantly to the possibilities of individualizing instruction. Given institutional pressure, it is also quite possible that we shall see the establishment of a system similar to the Regents Examinations found in New York. Or what is also possible, the National Assessment Program will serve in this role. What is more, to quote Rabinowitz and Travers:

> Though available tests are almost all in the field of subject matter achievement, a broad concept of effectiveness includes the teacher's influence on emotional adjustment in pupils' social attitudes, creative expression and the like. There are eminently commendable goals toward which a teacher might aspire, but we have, sad to say, few acceptable methods of measuring progress toward these goals.[1]

The behavioral orientation also has severe practical difficulties in dealing with the dialectic of group interaction (as, to be truthful, do the other accepted orientations that have historically been used in education). The behavioral orientation finds its basis in an experimental psychology which is itself founded upon research on singular events and research on individuals or rather small groups or organisms. It provides much less basis for training the teacher to help groups work together or practice group inquiry. The models are, not surprisingly, most effective when they see the teacher as a tutor or a manager of instructional systems. That they do not conceive of him as a group leader reflects on the basis of their individual-oriented technology.

There is also an assumption in the models that specific, "atomized" behavioral elements or knowledge are additive. That is, by merely presenting elements in "bite-sized pieces" the task of mastery of higher order operations is simplified. Not all of the models neglect this very real problem. Massachusetts, for one, recognizes that there is a skill and the artful performance of the skill itself. They refer to Polanyi's significant work, pointing to his view that "human experiences and feelings are more than the sum of their several components."[1] In more common sense terms, I may be able to successfully fulfill all the subroutines of bicycle riding--steering, pedaling, balancing correctly on a seat, etc.,--yet the coherence of all these component parts into a working "gestalt" is not guaranteed. I may, in fact, not be able to put them all together and may fail miserably at riding a bicycle every time I gather up enough courage to try. Anyone who has spent years learning how to play a musical instrument artistically can multiply this example tenfold. The models specify bite-sized behaviors, but deal much less effectively with the integration of these into significant clusters of behavior.

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[1] Rabinowitz and Travers, op. cit., p. 219.

Since the schools also serve to develop important attitudes (and remember that Massachusetts and the others include this in their "sets of learnings"), it is quite legitimate to ask how these are broken down. How, for instance, does one behaviorally reduce such global responsibilities as those involved in moral education?[2]

Let us consider another example of deficiencies associated with behaviorally specified objectives. There is little doubt that most educators would agree on the necessity of having students engage in what we broadly call problem solving. Now teachers could and do encourage their students to actively search for solutions to problems, to independently conduct research and experiments. However, difficulties can be seen if this objective is to be reduced to specific behaviors for a number of reasons: 1) Psychologists have not as yet identified many of the most important behavioral elements of problem solving; 2) Behaviors involving search and exploration can and do entail a greater range of behaviors than is usually recognized, and also "lead to such a multiplicity of achievements that, even if a list of specific behaviors could be produced, it would be of such an unmanageable length as to be worthless."[3]

The more mundane the activity and the goal, the easier it is to operationalize. This is evident in the list of instructional and noninstructional activities for the four job classifications. The examples of behavioral goals used by Georgia are of this rather mundane variety. It is easy to specify actions relating to, say, collecting milk money or checking mastery of spelling or arithmetic, but one cannot be as facile, say, with activities related to the emotional and artistic development of the child or, to use one of their own goals, assisting the student in developing a personal value system that will enable him to make rational choices.[1] Examples of these are nowhere to be found and one is forced to conclude that there seems to be little relation between the worthwhile goals and philosophy of the Georgia program and its abstract view of the teacher, and its operationalizing of these goals and views. The same basic criticism can be leveled against much of the substance of the other models which I examined.

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[1] University of Massachusetts, op. cit., p. 90. That they note but still actually ignore it will be shown in the section on "sensitivity."

[2] Cf., The excellent analysis by R.S. Peters in his "The Concept of Character," Psychological Concepts in Education, B. Paul Komisar and C.B.J. Macmillan, editors, (Chicago: Rand McNally, 1967).

[3] Robert M.W. Travers, "Models of Education and Their Implications for the Conduct of Evaluation Studies," mimeo, p. 4.

Furthermore, the danger of this type of reductionism in practice is that the lists of activities are obviously geared to making a more efficient present. Where are the activities, so essential to the continual rejuvenation of schools, such as questioning institutional arrangements. Also missing is the sense of the creativeness involved in teaching, not "just" in methodology but, for example, in a realization of the necessity of an examination of new media for what they do for and with consciousness, such as film art and the grammar of film itself.

One of the more interesting proposals of the Massachusetts Model concerns itself with the attempt to overcome the lack of familiarity with the grammar of media both as communication equipment and as significant art form. They propose that still and movie cameras and film, for instance, should be provided for each candidate.[2] This is significant in three major ways. First, and what may prove to be increasingly important, is the fact that organizing an educational environment for children (in effect, teaching) is a design problem requiring both a high degree of skill and an artistic sense for the relations of parts to the whole. By using film, the prospective teacher is introduced, through concrete means, to the problem of designing, say, an artistic creation, a social statement, or a communicative experience. Like micro-teaching, it acts to give the trainee a sense of the elements involved in designing meaningful experiences. It also introduces the trainee to the possibilities inherent in and the need for expression by both the student and the teacher in non-discursive as well as discursive forms.[3] Three of the four models chosen for analysis show a signal neglect of the importance of non-discursive logics and grammars in teaching. The continuation of a totally linear and discursive approach does not do justice to the psychological principles upon which much of the various programs are based. Secondly, it is becoming obvious that film art is a primary channel of increased awareness. One need not totally accept the assertions of McCluhan to realize the potential for involving elementary school students in film for perceiving familiar facets of their enviornment in new ways. Thirdly, there has been a tendency among educators to use the terminology of "the teacher as artist" as merely a ceremonial slogan. The focus upon film grammar, or the grammar of other media, can be an attempt to avoid the dichotomization of the teacher as artist (but a highly skilled one) who has had experience in the concrete creation of personally significant art forms through film and the teacher as reinforcer and instructor. Not only is the dichotomy naive, it may be dysfunctional to the view of a teacher as one who can make decisions based on a sense of the totality of the influences within an educational environment. Here Massachusetts seems particularly strong.

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[1] University of Georgia, op. cit., p. B-3.

[2] University of Massachusetts, op. cit., p. 322.

[3] University of Massachusetts, op. cit., p. 407, footnote 1.

## The Eclectic Approach to a Perspective on Teaching

While Georgia seems to draw upon "what is" to create an extremely large segment of its model of the teacher, others, as we have shown, go beyond this limited perspective. Michigan State turns to the behavioral sciences for much of its view of teaching. It takes an essentially eclectic position, drawing upon the established behavioral disciplines (e.g., psychology, sociology, etc.) to make teaching comprehensible.[1] This is more sophisticated than Georgia, for example (but the basic criticisms of the strongly behavioral approach do apply). However, since one of the avowed purposes of the Models of Elementary Teacher Education is to provide a foundation for a better theoretical perspective on teaching which will serve to generate significant research into the processes of schooling, as well as to effect concrete programmatic change, it should be analyzed fairly carefully.

There are possible problematic consequences as well as benefits in taking an eclectic view of teaching. These apply to nearly all of the past practices in teacher education as well as to the current ones, from the Stratemeyer-Lindsey procedures to the models; and they need to be taken into careful consideration if we are, in fact, to progress.

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[1] Michigan State University, op. cit., p. II-12.

Scientific statements are given their warrant by their place within a body of other warranted assertions. They are self-correcting in two ways: 1) They must cohere with other statements in the particular system. 2) They are continually held up to the light of new research by members of a community of scholars. It is the specialized community which must accept or reject the particular assertion (or the paradigm from which it evolved). Now this is an important point. By taking "knowledge" (theories, facts, etc.) from the behavioral disciplines in an eclectic fashion to legitimate their view of the teacher, teacher educators run the risk of pulling it out of its self-correcting context established by the members of disciplines. The teacher educators, hence, may be unable to critique outmoded knowledge, and theories which are being seriously questioned in the lending discipline may be naively accepted in education. A case in point is the emphasis being given by educators today on learning theory. This is a psychological paradigm, not an educationally warranted body of information. And while it seemingly has particular relevance to what teachers, in fact, do and to what educators are about, the fact that it is being radically challenged within the psychological community[1] is not widely known by teacher educators who would base much of their training programs upon it, and who would draw their research paradigms from it.

The relationship between the programmatic endeavors of teacher education and the disciplines from which it draws its primary insights, theories, and information that serve to make up its perspective(s) on teaching has to be further clarified. While the issues involved are not limited by any means to the teacher education models, they have the best chance of accomplishing such needed clarification before they are instituted and continually while they are operative.

## A Conservative Conception of the Mind

Any view of learning must in some way account for the human mind. Some views attribute to it an active, leading role while others demote its contribution to a passive, service function. The behavioral orientation falls into the latter category. With its emphasis and criterion for learning on the specification and enactment of behavioral objectives, the implied conception of the mind is that it is merely a container, a receptacle whose content is externally determined.

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[1] Cf., Karl U. Smith and Margaret Foltz Smith, Cybernetic Principles of Learning and Educational Design, (New York: Holt, Rinehart and Winston, 1966).

Consider, for instance, the following description as it appears in one of the models;

> Behaviors are determined by educational specialists who are thoroughly familiar with both the area of learning and with the characteristics of the learner. They are based on the assumption that the learner can demonstrate through his performance that he has _acquired_ the _prescribed_ element of knowledge, thought processes, skill or attitude.

and

> Instruction (is) the act of attempting to change the learner's behavior in the direction of preselected objectives.[1]

The teacher is essentially viewed as a presenter and controller. This is true, to varying degrees, in all the models. Without getting into the long standing debate concerning the advocacy of discovery _vs_. other approaches, it would seem as if this view tacitly accepts as a fundamental premise that the teacher is to pre-select content which is set out to be "acquired" by the students. Content seems to include not only "cognitive" knowledge (or learnings, as they often put it, which is quite a cannibalization of a phrase), but also thought processes, skills, attitudes, propensities, dispositions, etc. This has as its basis a model of the human mind as a container. That is, knowledge is reified into things which are known before acts are engaged in. These things can then be appropriated by the student, and he will demonstrate that he now has these things inside him by behaving according to pre-established criteria.

This view of teaching is close to what historically has been called the "impression model." It has as one important defect the fact that it fails to provide adequate room for radical innovation by the student. Also, to quote Scheffler, "We do not, after all, feed into the learner's mind all that we hope he will have as an end result of our teaching. Nor can we construe the critical surplus as generated in standard ways out of the materials we supply."[2] This attribution by the models of a causal relationship does not do justice to the facts of the matter or to the extent of the knowledge we possess concerning the relationship between teaching and learning.

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[1] University of Georgia, _op_. _cit_., p. I-15, 16 (emphasis added).

[2] Israel Scheffler, "Philosophical Models of Teaching," _The Concept of Education_, R.S. Peters, editor (New York: The Humanities Press, 1967), p. 124.

## A Conservative View of the Student

It is also possible to critique the conception of the pupil found in the models, which stems from their strongly behavioral orientation. We have already noted the implicit use of the container metaphor in the models, one which envisions education as "filling the student's brain" with data such as skills, facts, and emotions. There is an implicit model of the elementary school student in the teacher education models, one which fits extremely well into an industrial-production type of logic. Here the pupil is seen as a "plastic mass of raw material" that can be slowly and effectively shaped.[1] The criticism to be offered here is not to say that teachers are not already shaping children's behavior; obviously, this is the case. What is more to the point is, however, that as a model of the pupil it is a very limited representation of reality, and is woefully inadequate. The underlying assumptions of a position determine to a very large extent the logical and programmatic structure built upon them. Continuing the implicit factory metaphor, with the student as a product who is shaped, ignores a significant amount of philosophical and psychological progress made in the last decades. It posits an ideological and moral position which needs to be questioned strongly and re-thought.

One of the more crucial problems with a high degree of specificity of objectives is that, in the language of systems analysis, it tends to produce a closed loop system which provides little possibility for fundamental change or advancement. What is more, systems that are built around highly specified objectives are nearly inevitably culture bound and seem to turn to the immediately available social order in order to determine the specific activities in which pupils will be called upon to engage in school.[2]

Let us be very specific here. The emphasis on rather immediately observable behavior is most evident in the statement by Georgia that "Behaviors of the pupils were found necessary to completely and accurately define those necessary for the teacher."[3] That is, the behaviors of elementary school students must be known beforehand so that we can then delimit the teacher's own behaviors. The problems involving the issue of creative behavior and the extreme difficulty in ascertaining a complete taxonomy of pupil behavior are clearly not met here. Yet, even if we were to hold such criticisms temporarily in abeyance, our doubts about the problems of taking such an orientation to extremes are not allayed by the following.

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[1] Travers, op. cit., p. 5.

[2] Travers, Ibid.

[3] University of Georgia, op. cit., p. I-8.

In the Georgia Model, for example, at no time is an adequate example given of statements of behavior which are of a higher order than memory or a low level of psycho-motor operation. After stating that the student should demonstrate through his performance that he has acquired not only the requisite knowledge (here meant to be "facts" or factual data) but also such complex items as thought processes and attitudes, the examples given to legitimate this concern are rather limited. "The child writes his name correctly in manuscript form" and "The pupil spells ninety percent of the words in the level four list correctly" are the illustrations used.[1] While these might initially suffice, the basic premise of the model of basing *everything* on behavioral change must be questioned if examples of the usefulness of this mode of orientation applied to what many consider to be the most crucial aspects of schooling, such as higher order thought processes and complex skills and appreciations, are not forthcoming.

## Choice and Sensitivity--A Counterbalance

While this analysis has focused primarily on issues with which the models do not adequately deal--most importantly, the restricted scope, the limitation on change and creativity, the strong control orientation and the lack of logical and political sophistication--there are facets in Syracuse, Michigan State, and Massachusetts which attempt to counterbalance the possible conservatism.

In the Syracuse model there is a Self-Directed Component in which the student is given concrete experience in being responsible for structureing at least a portion of his own program.[2] The feeling is that to do otherwise functions to maintain a view of society which, in their words, is *non-open*. The Self-Directed Component ideally implies "a critical examination and re-synthesizing of the ideas and understandings" that the student is asked to deal with. On a political level, this view of teaching assumes that it will lead to a greater degree of institutional innovation in society.[3] Such a proposal cannot help but give the student experience in the possibilities for teaching in a relatively less structured environment and designing such an environment for partial use in his own classroom.

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[1] University of Georgia, *Ibid*., p. I-15.

[2] Syracuse University, *Specifications for a Comprehensive Undergraduate and Inservice Teacher Education Program for Elementary Teachers* (OE 58016) Washington, D.C.: USOE, 1968. p. 54.

[3] *Ibid*., p. 411.

One of the more promising aspects of the models, especially those of Massachusetts and Michigan State, is the specification of alternative activities leading to the same objective. The view of trainee as chooser among various alternatives can, no doubt, serve to reinforce the commitment of the trainee to making concrete decisions in his own teaching based on a consideration of other possible modes of reaching a particular goal and the structuring of alternative paths among which his students may choose. This is one of the strongest points of the models and realistically may lead to a more humanized, rather than control-oriented school.

Also serving to counterbalance the control orientation is the emphasis by two of the models on inter- and intrapersonal awareness. Not only is teaching characterized as a "continuous process of problem resolution,"[1] and as a decision-making process,[2] but both Massachusetts and Syracuse place a good deal of weight on sensitivity training, believing that teacher effectiveness is enhanced by personal sensitivity to self and others.

Massachusetts focuses on a teacher who is a person with a high degree of self-awareness of interpersonal relationships and the component mechanisms which make these relations fruitful, such as empathy, respect, and spontaneity. These constructs are broken down into behavioral parts which are practiced in the hope that by overtly focusing on these specific behaviors, the student will be more probable to engage in more genuine interpersonal relationships than he would have without the training.

For example, empathy is defined in terms of the following types of specific behaviors: 1) attending behavior (maintaining eye contact, physical attentiveness, verbal following behavior in which the individual stays on the other's topic of conversation), 2) reflection of feeling (trainee attends primarily to the feeling or emotional statements of the others), and 3) physical empathy (simply assuming the physical posture of the other in an attempt to feel more closely what the other is feeling). It is believed by the model builders that, if these skills are practiced in sensitivity training exercises similar to Gestalt therapy and Esalen techniques, that "true empathy" becomes a heightened possibility since a tacit understanding of the complex phenomenon of empathy can evolve.[3] In their words, "this is a first step toward a true acquisition of these human relations skills."[4] Much of the model focuses on human relations "skills" such as these or on various non-verbal and physiological skills awareness of sexual and racial relations, group interaction, etc., through the various training exercises. The vision of the teacher as open and sensitive to new modes of perception and bringing to the level of awareness usually hidden modes of interacting with one's environment is also evident in their emphasis upon increased sensory awareness through sensory experiences in aesthetics.[1]

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[1] Syracuse University, Ibid., p. 90.

[2] Ibid., p. 219.

[3] University of Massachusetts, op. cit., pp. 94-96.

[4] University of Massachusetts, Ibid., p. 96.

The outlook on the teacher as one who is able to experience much more by freeing his often culturally constricted modes of perception is powerful. One must question some of its operationalization, though.

Polanyi's and others' point that there is a gap between the conscious reduction of feeling states, of artistic modes and perceptions, and even of much scientific activity, to concrete skills and the activity or mode of perception itself[2] is noted; but, in essence, it is ignored. This is not to say that the reduction practiced by, say, Massachusetts is not perhaps somewhat better than the lack of attempts at sensitivity today. It is to say that it very well may be a false search in the long run and may cover up the ambiguity of what it is really like to confront another person. The conscious articulation of the "skills" of empathy, etc. may open people to the possibility of greater interperaonal involvement but, at the same time, it may destroy the very qualities of humaneness that make such encounters worthwhile. Rather than join the increasing, but all too familiar "bandwagon," it might be preferable to give some thought to the "latent dysfunctions" as well as the possibly very real positive aspects of the endeavor. The rebuilding of the atomized skills of human relations to the Gestalt of unselfconscious activity where one (here a teacher) dwells in the intersubjective situation is not done in as facile a fashion one might think from a reading of the Massachusetts Model. While the view that the teacher qua sensitive individual (in the most pregnant sense of the term) can be engineered by reducing these qualities to skills may be intuitively pleasing, it requires an act of faith that needs more of a warrant than is presented. While human relations training is one of the more forward-looking aspects of these models and is, no doubt, worthwhile, a genuine warrant is essential if we are to meet the goals espoused by the models.

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[1] Ibid., pp. 108-110.

[2] Michael Polanyi, The Tacit Dimension, (New York: Doubleday Anchor, 1966); Michael Polanyi, Personal Knowledge, (New York: Harper Torchbooks, 1964); Thomas F. Green, "Teaching, Acting, and Behaving," Philosophy and Education, Israel Scheffler, editor, (Boston: Allyn and Bacon, 1966); and Ira Steinberg, Educational Myths and Realities, (Reading, Mass.: Addison-Wesley, 1968) are but a few of the references that treat the subject.

## Summary

The tone of this analysis has been one of caution. The Models of Elementary Teacher Education offer a perspective on teaching which is quite different from that usually found in the past. Due to this, we have tried to present issues that are raised by the models' behavioral conception of teaching which are disconcerting on a practical level and somehow disturbing on an intellectual one.

Throughout this analysis one of the things we have pointed to repeatedly is the need for the builders of the Models of Elementary Teacher Education to go further than they have done in developing their perspective. This is not merely a matter of the limited time to write the models. They have limited themselves to the development of a scientific and technical rationality and neglected the political and ethical dimensions of their acts and the political elements of the systems designs they have articulated.

We have also noted in our discussion of the behavioral orientation that effectiveness and quality are different concepts and do not necessarily entail each other. While effectiveness may be one measure of quality, it is not the boundary measure. Our discussion has often centered around the control modality which is prevalent in the models and the "mind as container" metaphor that seems to cohere with this position. Control becomes a significant issue that should be given further examination. Many individuals and groups in schools are becoming increasingly disaffected with schools, not only because the schools are "irrelevant" (which ever meaning one gives that ambiguous word) but even more because they are disturbed by attempts by some educators to control the minds of the young in the name of efficiency. This can have profound consequences for the basic perspective on the teacher espoused by the models. Are they prepared to face this issue? If their conception of the teacher is confined to an efficient achiever of the easier educational objectives, they buy a conservatism of a disturbing sort.

Finally, one cannot but wonder if the implicit search for total surety in the models does not mirror a false quest for unambiguous meanings. It may be more of an attempt to construct a science of education based on the impressiveness of scientific language and explanation than on a respect for the complexity of the data. The reality of children's lives and the complexity of their search for meaning in a difficult world requires a far more radical conception of teaching than the behaviorism of the models has provided us.

# Chapter Eight

## Recommendations for Research to Increase Feasibility and Reduce Dislocation

The purpose of this project was to analyze the Bureau of Research models in such a way as to help consumers comprehend them as a consumable product and to help potential developers guide their activity so as to maximize the feasibility of the models.

This chapter recommends research which in the opinion of the investigators will be likely to improve the technology of systems approaches to teacher education. Our assumption is that the potential of modular, managed curricula for improving teacher education is very great, that the Bureau of Research projects represent, despite the haste with which they had to be produced, a close approximation of the state of the art. Our estimate is that they contain a sufficient technology to be feasible provided:

(a) several aspects are improved by employing for each model ideas contained in the others, and

(b) that research is conducted to improve the conceptual and technical base on which they can be engineered.

The research can be done largely during development and implementation. The recommendations are made in this spirit and are structured in terms of the six aspects of program planning which were the focus of this investigation. Since recommendations for research and conceptual development were included throughout the report, the purpose here is to underline a few of the basic concerns.

### The Performance Models: The Conceptions of the Teacher

The basic description of the teacher needs to be a working model whose elements can guide program development and unify the operating program. Nearly all the program models need improvement of their model. Research on the building of models of complex functionaries like teachers needs to be carried on to facilitate this task. Models of personnel from other fields can be heuristic, but research specifically on the conceptualization of the teacher needs to be done because of the uniqueness of the role, the emergent character of education, and the emergent and fluid nature of teaching, all of which enormously complicate the job of modeling the teacher. Several of the models are heuristic, as described in Chapter Three.

### Program Strategies: Component Content and Form

A number of questions emerged from the analysis which are susceptible to study and research. Most critical probably, is the problem of developing a unified program when the components have to be as numerous and complex as they do in teacher education. Studies of the conceptualization of the teacher, as indicated above, may help greatly. In addition, devices for relating program elements need to be explored, as indicated in Chapter Four (pages 4.3 to 4.9), to develop management procedures which reduce the potential atomization of program elements. It should be possible to develope procedures for interrelating components while maintaining component integrity.

The relationship between modular form and various component strategies need exploration. A variety of questions should be studied which parallel this one: "Should the same form be used for a sensitivity training component as for one which teaches the elements of a complex teaching skill in the teaching laboratory?" Systems for relating modular structure to a variety of component strategies need to be developed.

Alternative ways of structuring components need to be developed. Beginning with the general (but vital) question "How does one perform a task analysis of an area as amorphous and complicated as The History of Western Thought in such a way that the program objectives which sult can be related to the functioning of the teacher?" and proceeding to specific ones such as "Should teaching skills be mastered and then built up into teaching strategies or should general strategies be taught with provision for teaching skills?" an enormous range of structures needs to be conceptualized and critical ones need research. The programs now specified provide for the use of many modes of instruction (CAI, Micro-Teaching, Sensitivity Training, etc.). Are some learning strategies best suited to certain modes? Are certain mode-strategy combinations best suited to certain types of objectives? Long before research provides evidence on these questions, operational taxonomies can be built which relate types of learning to types of objectives and can guide both research and program development.

## The Program and the Client: Matching People and Environments

Hunt's analysis (Chapter Six) of the problem of relating student and program identifies a number of questions which should be susceptible to study and research. The question of personal style and precision of training needs clarification. The ComField effort is a strong beginning, and building on it there should emerge a series of models which open up the issue "How can we train precisely and insist that the trainee develop competence and simultaneously provide for the development of the trainee's unique strengths and the actualization of his personality?" Intuitively we believe this is a soluble problem, well within the state of the art if research is supported in the area.

In addition, during the developmental phase alternative Aptitude-Treatment-Interaction models should be explored to determine ways of modulating program strategies to optimize and capitalize on trainee characteristics. The simple industrial model is not adequate, and programs should move toward more complex matching models.

Programs and the Field. The problem of relating the products of a strong teacher education program to the schools where they will work is a political as well as a substantive problem. The models provide many ideas on this subject and pilot studies of the more promising ones need to be tested immediately. In addition, a general problem which needs massive study, both conceptual and empirical, is the development of schools in which highly precise in-service teacher education is continuous and pervasive. Although there is much experience with specific devices for in-service education there is no experience with a school which would have a "bank" of modular in-service training components available to it. At this writing there is a large enough supply of devices to permit immediate and intensive experimentation to develop the engineering of this critical facet of program development and implementation.

Research should also be conducted into ways of achieving common conceptualization of the schools envisioned by the models on the part of the clientele which will have to accept them: unions, faculties, administrators, community members, students. The consortia will not succeed without operational consensus at appropriate levels. Specific research is needed in this area as rapidly as it can be mounted.

Management Systems. Needed specific research was suggested in Chapter Four. In addition, we believe that the critical need is in the area of student relationships to the management system. How much feedback can one live with? How substitute student-made activities for prescribed ones? How collate human and material support? How relate learning style to program style?

Perhaps most important, how can a massive modular program be managed in such a way that the training mode or operational spirit of the program is not dominated by the needs of management? For example, one cannot train a teacher to be a creative problem-solver entirely by prescribed units on how to solve problems. The program models often have a problem reconciling their essential geist with the geist of management systems.

This is a soluble problem; many of the models initiated approaches to it which can be developed during the next phases.

## Summary: Behaviorism and Conservatism

Throughout this report we have suggested ways of increasing the workability (feasibility) of the models and conceptualization and research projects which would enhance their development and implementation

Apple's analysis (Chapter Seven) raises perhaps more directly the fundamental question which needs exploration. Put bluntly, it is "Does behaviorism tie us to the past?" The program models stressed future-planning, yet their components are in substance disturbingly like those of past generations of teacher education programs (see Chapter Four). Most suggestions for schools and training methods were drawn from the now-familiar innovations of recent years (team teaching and sensitivity-training, for example). Is this because the job analysis of the teacher cannot be future oriented or because it was not bold enough?

Serious debate on this question raises the Huxleyan questions anew and properly so, for if they are not faced squarely we may tie ourselves to the past either through methodological error or lack of nerve and either would be a poor excuse for conservatism in an already hidebound field.

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